SUGAR BULLETIN No. 23.

DEPARTMENT OF AGRICULTURE,
BRITISH GUIANA.

FIELD EXPERIMENTS WITH SUGAR CANE XXIII.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, XX.

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1954.

MAJOR DISEASES OF SUGAR CANE IN BRITISH GUIANA.

THE "DAILY CHRONICLE," LTD., GEORGETOWN, DEMERARA.
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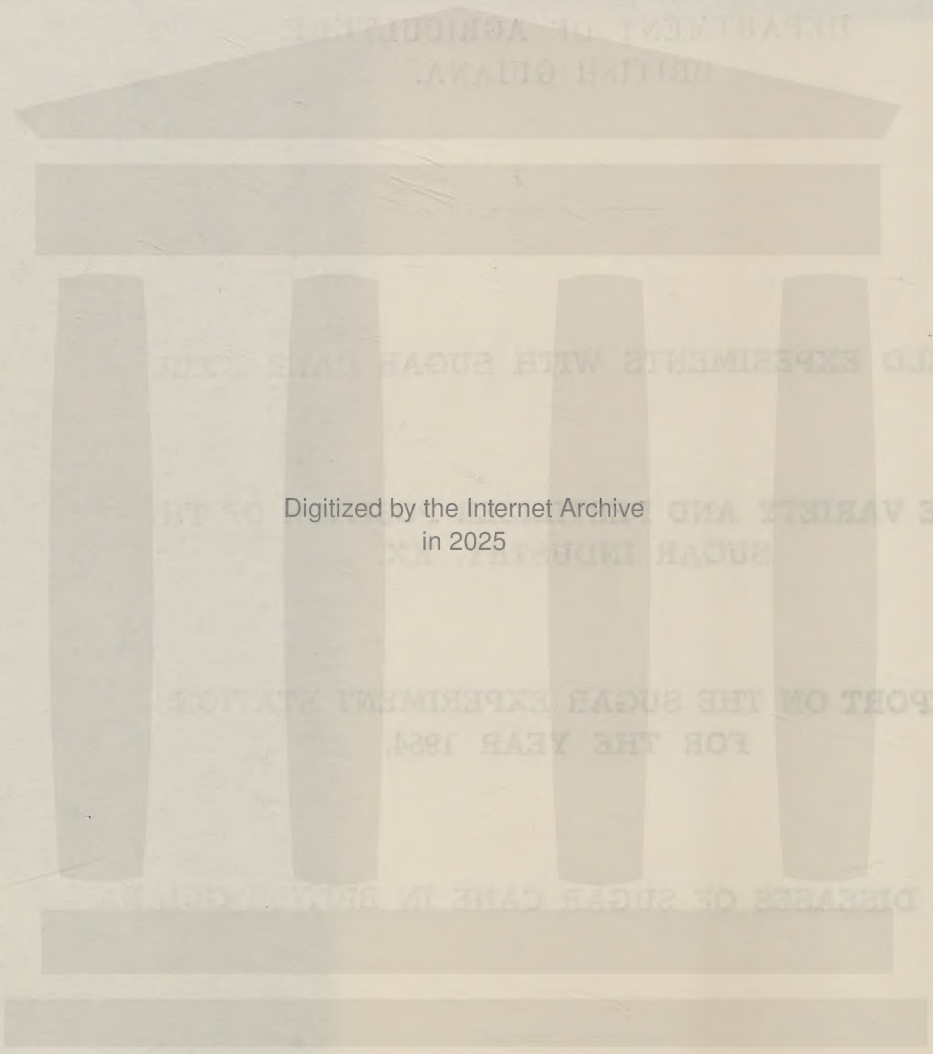

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FIELD EXPERIMENTS WITH SUGAR CANE, XXIII.

BY

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AND

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INTRODUCTION.

This paper summarises the results of Field Experiments reaped during 1954. They consist of the following:—

Cane Variety Trials.	.....	70
Fertilizer Experiments.	.....	9
Cultivation Experiments.	.....	1

RAINFALL.

The rainfall at the Sugar Experiment Station during 1954 was 167.34 inches which is the heaviest recorded since the Station was founded in 1921. Indeed, at the neighbouring Central Meteorological Station, Department of Agriculture, Georgetown, the rainfall for 1954 is the highest recorded since 1880 when reliable rainfall measurements were instituted.

The monthly distribution of the rainfall in 1953 is compared with the monthly averages at the Experiment Station for the period 1921—1953 in Table I. It will be seen that February, March, May and December are the only months in which the rainfall was less than the 1921—1953 averages, while for the other months of the year it was considerably above average. During April, July, August and November in particular the rainfall was exceptionally heavy, the amounts recorded during these months being 347, 180, 398 and 379 per cent. of the means of the respective months.

TABLE I.—**Comparison of the Monthly Rainfall at Sophia Sugar Experiment Station for 1954 with the average for 1921—1953.**

Month.	Actual Rainfall, 1954. Inches.	Average Rainfall, 1921—1953. Inches.	Excess or Deficit Inches.
January 1954	14.42	10.70	3.72
February „	2.27	5.05	— 2.78
March „	2.43	4.66	— 2.23
April „	24.84	7.16	17.68
May „	10.17	12.82	— 2.65
June „	14.78	14.96	— .18
July „	21.36	11.86	9.50
August „	32.23	8.09	24.14
September „	6.38	3.07	3.31
October „	6.80	3.88	2.92
November „	23.58	6.22	17.36
December „	8.08	14.11	— 6.03
Total	167.34	102.58	64.76

VARIETY TRIALS.

The results of the 1954 series of Variety Trials are presented and discussed under the following sub-heads :—

(A). Variety Sorting Trials ;

(B). Plant Cane Variety Trials ;

(C). First Ratoon Variety Trials ;

(D). Second and Third Ratoon Variety Trials ;

(E). Variety Performance Summary ;

(F). General Summary and Recommendations ;

SUB-SECTION A.—VARIETY SORTING TRIALS.

Two Variety Sorting Trials were reaped as Plants in 1954. The varieties therein consisted mainly of the Barbados 1949 series of seedlings. One of these trials was at the Sugar Experiment Station and the other at Uitvlugt Estate.

The two Sorting Trials consisting mainly of the Barbados 1948 seedling series, were reaped as First Ratoons, and the one of the Barbados 1947 seedlings as Second Ratoons.

The more promising varieties from these trials are being further tested in large scale field trials.

The results of the three series of Sorting Trials are summarised in Table II and are classified according to soil type and locality as follows :—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Sophia	1, 51, 82	3
Pegassy Clay—Uitvlugt	52, 83	2

TABLE II.—Results of a Plant Cane "Variety Sorting" Trial on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 4 West "A". Reaped 5.v.54 at 12.50 months. Rainfall;—115.57 inches.						
MEANS OF 4 PLOTS:	B. 49353	60.38	15.43	91.7	9.31	126.15	82
	*B. 41227	63.88	14.55	89.7	9.29	125.88	
	B. 49354	57.97	15.19	90.3	8.81	119.38	
	B. 4942	54.85	15.89	91.2	8.72	118.16	
	B. 49257	66.93	12.96	87.7	8.67	117.48	
	B. 49122	60.07	13.64	89.7	8.19	110.98	
	B. 49186	58.37	13.62	89.0	7.95	107.72	
	B. 4995	58.28	13.53	89.5	7.88	106.78	
	B. 49377	62.84	12.50	85.0	7.85	106.37	
	B. 4956	57.59	12.96	90.5	7.46	101.08	
	B. 49376	52.05	14.28	89.8	7.43	100.68	
	B. 49380	58.89	12.50	87.2	7.36	99.73	
	B. 4906	51.63	13.93	89.2	7.19	97.43	
	B. 49197	53.10	13.63	87.2	6.99	94.72	
	B. 49229	52.09	13.38	88.3	6.97	94.44	
	B. 4905	46.45	14.83	90.0	6.96	94.31	
	B. 49355	47.03	14.62	90.1	6.87	93.09	
	B. 4966	47.57	14.45	90.0	6.87	93.09	
	B. 49166	46.17	13.78	87.5	6.71	90.92	
	B. 49309	48.49	13.55	88.5	6.57	89.02	
	B. 49301	45.43	14.41	89.6	6.54	88.62	
	B. 4968	41.49	14.90	87.7	6.18	83.74	
	B. 49388	51.58	11.79	84.0	6.08	82.38	
	B. 4970	39.82	14.73	90.0	5.86	79.40	
	B. 4945	38.94	14.67	88.2	5.74	77.78	
	Mean:				7.38	100.00	
	Significant Difference, 20:1:				1.52	20.60	

* Standard Cane.

TABLE II. (Contd.)—**Results of a First Ratoon "Variety Sorting" Trial on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane, per acre Tons.	Trial No.
	Sophia, Field 8 West. Reaped 11.iii.54 at 11.50 months								
	Rainfall:—92.30 inches.								
MEANS OF 5 PLOTS:	B. 37161	41.55	14.89	91.0	6.23	129.79	B. 41227	13.63	51
	D. 62/43	42.67	14.46	87.4	6.08	126.97	B. 37161	12.79	
	*B. 41227	39.88	14.57	89.6	5.81	121.04	D. 62/43	12.52	
	B. 46378	39.13	14.11	89.8	5.52	115.00	B. 46378	12.02	
	B. 4362	28.94	15.66	89.0	4.53	94.37	B. 48372	9.77	
	B. 48372	32.01	14.08	87.6	4.51	93.96	B. 4362	9.74	
	B. 4888	28.79	14.70	88.7	4.23	88.12	B. 4888	9.12	
	B. 4373	29.11	13.53	85.7	3.94	82.08	B. 4098	8.99	
	B. 48392	29.86	13.01	85.5	3.89	81.04	B. 48392	8.80	
	B. 4098	22.28	14.84	88.4	3.30	68.75	B. 4373	8.29	
	Mean:				4.80	100.00			
	Significant Difference, 20:1:				.89	18.54			

Results of a Second Ratoon "Variety Sorting" Trial on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 5 West. Reaped 22.iv.54 at 11.25 months								
	Rainfall:—96.31 inches.								
MEANS OF 4 PLOTS:	*B. 41227	37.06	16.64	91.0	6.17	141.19	B. 41227	19.65	1
	B. 46378	35.64	16.79	91.2	5.98	136.84	B. 46378	19.47	
	B. 45137	35.25	16.47	91.2	5.80	132.73	B. 45137	19.15	
	B. 47258	32.49	17.48	91.7	5.68	129.98	B. 47258	17.31	
	B.S. 4711	25.96	15.75	89.3	4.09	93.59	B.S. 4711	16.55	
	B. 47179	30.03	13.62	85.7	4.09	93.59	B. 47162	15.80	
	B. 47162	24.14	15.89	91.1	3.83	87.64	B.S. 4747	14.52	
	B. 47397	24.19	15.48	89.2	3.74	85.58	B. 47179	14.49	
	B. 47379	24.06	15.52	90.1	3.73	85.35	B. 47379	14.22	
	B.S. 4747	22.03	15.54	88.4	3.42	78.26	B. 47397	12.93	
	B. 4764	21.04	15.92	89.6	3.35	76.66	B. 4764	12.79	
	B. 4788	16.77	15.31	89.5	2.57	58.81	B. 4788	12.53	
	Mean:				4.37	100.00			
	Significant Difference, 20:1:				1.59	36.38			

* Standard Cane.

TABLE II.—(Contd.)—Results of a Plant Cane "Variety Sorting" Trial on Pegassy Clay

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre,		Trial No.
					Tons.	% Mean.	
	Pln. Uitvlugt, Field 71 M.Z.E. Reaped 15.ix.54 at 15.25 months. Rainfall:—186.20 inches.						
MEANS OF 4 PLOTS:	B. 4942	41.75	14.60	87.8	6.10	130.90	83
	B. 37161	42.00	14.32	89.7	6.01	128.97	
	B. 49122	38.42	14.45	88.3	5.55	119.10	
	B. 49377	39.33	13.88	84.7	5.46	117.17	
	B. 4995	37.40	14.22	90.7	5.32	114.16	
	B. 49354	36.51	14.55	86.8	5.31	113.95	
	B. 4956	44.26	11.65	84.9	5.16	110.73	
	B. 49186	38.63	13.34	86.9	5.15	110.51	
	*B. 41227	39.14	12.88	83.6	5.04	108.15	
	B. 49353	36.00	13.64	87.1	4.91	105.36	
	B. 4906	34.38	13.86	87.5	4.76	102.15	
	B. 4905	34.95	12.87	79.8	4.50	96.57	
	B. 49380	37.68	11.59	81.7	4.36	93.56	
	B. 49166	32.00	13.12	86.1	4.20	90.13	
	B. 49197	32.79	12.70	84.0	4.17	89.48	
	B. 49309	33.58	12.37	84.7	4.15	89.06	
	B. 4966	34.35	11.83	80.9	4.06	87.12	
	B. 49301	32.00	12.61	83.6	4.03	86.48	
	B. 4968	26.53	14.29	85.0	3.79	81.33	
	B. 49388	33.19	11.03	76.9	3.66	78.54	
	B. 49229	26.89	13.17	85.1	3.54	75.97	
	B. 4970	25.56	12.73	83.6	3.25	69.74	
	Mean:				4.66	100.00	
	Significant Difference, 20:1:				.82	17.60	

* Standard Cane.

TABLE II.—(Contd.)—**Results of a First Ratoon "Variety Sorting" Trial on Pegassy Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. De Kinderen, Field 73 De K. Reaped 31.iii.54 at 11.75 months. Rainfall:—102.53 inches								
MEANS OF 5 PLOTS:	B. 37161	30.75	15.08	91.4	4.63	148.87	B. 37161	11.34	52
	*B. 41227	30.02	13.46	86.9	4.04	129.90	B. 48372	11.30	
	B. 48372	28.56	13.50	83.3	3.86	124.12	B. 41227	10.33	
	B. 4867	23.71	12.29	80.7	2.91	93.57	B. 48392	7.90	
	B. 48126	20.98	13.79	88.4	2.89	92.93	B. 48351	7.47	
	B. 48392	23.64	11.93	78.5	2.82	90.68	B. 48126	7.15	
	B. 48332	21.06	13.18	84.2	2.78	89.39	B. 4867	7.13	
	B. 4881	25.24	10.61	74.1	2.68	86.17	B. 48332	6.85	
	B. 48351	22.04	12.10	83.2	2.67	85.85	B. 4881	6.71	
	B. 48117	20.87	12.14	79.7	2.53	81.35	B. 48117	6.57	
	B. 48179	19.87	12.15	83.4	2.41	77.49	B. 48179	5.39	
	Mean:				3.11	100.00			
	Significant Difference, 20 : 1:				.63	20.26			

*Standard Cane.

B.—PLANT CANE VARIETY TRIALS.

Twenty Variety Trials were reaped at the Plant cane stage during 1954. These are classified according to soil type and locality as follows:—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Demerara	84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97.	14
Frontland Clay—Berbice	.....98, 99.	2
Riverside Clay	.....100, 101.	2
Pegassy Clay	.....102, 103.	2

TABLE III.—Results of Plant Cane Variety Trials on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, 4 West "B". Reaped 5.v.54 at 12.50 months. Rainfall:—115.57 inches.						
MEANS OF 5 PLOTS:	*B. 41227	61.86	14.59	90.1	9.03	115.33	84
	D. 54/43	68.05	12.72	86.6	8.65	110.47	
	B. 45270	57.85	13.26	89.1	7.67	97.96	
	D. 27/45	54.78	13.97	89.8	7.65	97.70	
	B. 44279	53.56	14.07	91.0	7.54	96.30	
	B. 4867	53.73	13.74	88.6	7.38	94.25	
	D. 4/43	54.00	12.82	86.9	6.88	87.87	
	Mean:				7.83	100.00	
	Significant Difference, 20:1:				—	—	
	Sophia, 3 West "B". Reaped 10.v.54 at 12.00 months. Rainfall:—104.40 inches.						
MEANS OF 4 PLOTS:	*B. 41227	65.86	13.93	87.9	9.17	122.27	85
	D. 58/43	60.00	13.75	88.4	8.25	110.00	
	B. 47225	54.67	14.32	87.9	7.83	104.40	
	B. 46230	54.04	14.42	85.6	7.79	103.87	
	B. 46218	50.40	14.38	85.7	7.24	96.53	
	D. 4/43	56.78	12.43	84.7	7.06	94.13	
	B.S. 4733	57.46	11.35	83.4	6.52	86.93	
	B. 47298	44.88	13.75	86.0	6.17	82.27	
	Mean:				7.50	100.00	
	Significant Difference, 20:1:				1.26	16.80	
	Sophia, 2 West "B". Reaped 24.viii.54 at 14.50 months. Rainfall:—147.05 inches.						
MEANS OF 4 PLOTS:	D. 184/46	53.13	14.99	91.3	7.96	104.46	86
	D. 133/46	61.77	12.83	88.5	7.92	103.94	
	D. 2/46	52.26	13.98	89.9	7.31	95.93	
	*B. 41227	56.73	12.84	86.3	7.28	95.54	
	Mean:				7.62	100.00	
	Significant Difference, 20:1:				—	—	

*** Standard Cane.**

TABLE III. (Contd.).—Results of Plant Cane Variety Trials on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, 2 West "A". Reaped 26.viii.54 at 14.50 months. Rainfall:—152.75 inches.						
MEANS OF 4 PLOTS:	D. 259/46	60.80	13.93	89.1	8.47	121.87	87
	D. 49/46	58.83	13.36	86.7	7.86	113.09	
	*B. 41227	53.39	12.95	86.4	6.91	99.42	
	D. 183/46	48.32	13.37	87.4	6.46	92.95	
	D. 250/46	48.14	12.71	85.3	6.12	88.06	
	D. 275/46	46.85	12.61	88.0	5.90	84.89	
	Mean:				6.95	100.00	
	Significant Difference, 20:1:				1.33	19.14	
	Sophia, 2 East "B". Reaped 14.ix.54 at 14.50 months. Rainfall:—161.53 inches.						
MEANS OF 4 PLOTS:	D. 133/46	65.21	13.76	88.1	8.97	125.28	88
	D. 141/46	59.52	13.46	87.5	8.01	111.87	
	*B. 41227	55.02	14.05	88.0	7.73	107.98	
	D. 106/46	56.38	13.54	88.6	7.63	106.56	
	D. 112/46	59.46	12.10	87.4	7.19	100.42	
	D. 250/46	57.30	11.68	82.9	6.69	93.44	
	D. 124/45	53.88	12.28	83.7	6.62	92.46	
	D. 91/46	46.72	12.96	88.3	6.05	84.50	
	D. 94/46	43.35	12.77	86.5	5.53	77.23	
	Mean:				7.16	100.00	
	Significant Difference, 20:1:				1.37	19.13	
	Sophia, 2 East "A". Reaped 17.ix.54 at 14.50 months. Rainfall:—162.01 inches.						
MEANS OF 5 PLOTS:	D. 49/46	60.93	12.70	86.0	7.74	116.22	89
	*B. 41227	54.40	13.63	86.8	7.41	111.26	
	D. 183/46	48.80	14.75	90.8	7.20	108.11	
	D. 184/46	48.71	14.13	89.5	6.88	103.30	
	D. 175/46	52.16	13.14	88.0	6.85	102.85	
	D. 275/46	47.89	13.18	86.3	6.31	94.74	
	D. 92/46	42.94	13.73	87.0	5.90	88.59	
	D. 98/46	38.46	12.94	86.7	4.98	74.77	
	Mean:				6.66	100.00	
	Significant Difference, 20:1:				1.27	19.07	

* Standard Cane.

TABLE III. (Contd.).—Results of Plant Cane Variety Trials on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, 1 East "B". Reaped 23.ix.54 at 13.75 months. Rainfall:—153.56 inches.						
MEANS OF 4 PLOTS:	*B. 41227	56.98	14.04	87.1	8.00	116.62	90
	D. 23/46	59.66	13.35	84.7	7.96	116.03	
	D. 56/45	47.39	15.54	89.4	7.36	107.29	
	D. 35/45	50.91	14.16	88.6	7.21	105.10	
	B. 44279	51.22	13.58	87.9	6.95	101.31	
	D. 177/45	48.79	13.71	87.4	6.66	97.08	
	B. 45274	53.14	12.46	83.6	6.62	96.50	
	B. 44150	48.29	13.32	86.7	6.43	93.73	
	D. 83/45	45.02	14.17	86.8	6.38	93.00	
	D. 4/46	41.67	14.49	86.5	6.04	88.05	
	D. 5/46	47.71	12.29	83.9	5.86	85.42	
	Mean:				6.86	100.00	
	Significant Difference, 20:1:				1.13	16.47	
	Sophia, Field 1 East "A". Reaped 24.ix.54 at 14.00 months. Rainfall:—153.59 inches.						
MEANS OF 4 PLOTS:	B. 4556	54.04	13.34	86.0	7.21	114.99	91
	B. 46288	54.72	12.98	86.7	7.10	113.24	
	*B. 41227	51.29	13.27	86.5	6.81	108.61	
	B. 46308	48.98	13.58	87.4	6.65	106.06	
	B. 46384	53.04	12.10	82.6	6.42	102.39	
	B. 46150	46.48	13.35	88.2	6.20	98.88	
	B. 46116	49.99	12.25	84.2	6.12	97.61	
	D. 22/46	47.77	12.60	86.2	6.02	96.01	
	B. 46103	51.95	11.58	85.6	6.01	95.85	
	B. 46230	42.99	13.80	85.6	5.93	94.58	
	D. 33/45	33.66	13.52	86.8	4.55	72.57	
	Mean:				6.27	100.00	
	Significant Difference, 20:1:				1.24	19.78	
	Sophia, Field 15 West "A". Reaped 30.ix.54 at 12.25 months. Rainfall:—146.99 inches.						
MEANS OF 3 PLOTS:	B. 4362	53.01	16.65	90.5	8.51	115.31	92
	B. 47258	55.90	15.03	90.4	8.40	113.82	
	D. 58/43	55.56	14.87	89.0	8.26	111.92	
	B.S. 4744	54.30	14.60	89.4	7.93	107.45	
	*B. 41227	60.13	12.89	87.2	7.75	105.01	
	D. 27/45	51.18	14.79	88.5	7.57	102.57	
	D. 37/45	51.72	13.75	88.3	7.11	96.34	
	B. 43413	48.78	14.30	87.6	6.98	94.58	
	B. 45137	50.77	13.09	86.2	6.65	90.11	
	B. 46290	46.58	12.96	88.0	6.04	81.84	
	D. 54/43	50.54	11.88	82.7	6.00	81.30	
	Mean:				7.38	100.00	
	Significant Difference, 20:1:				1.30	17.62	

*Standard Cane.

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
Sophia, Field 15 West "B". Reaped 30.ix.54 at 12.25 months. Rainfall:—146.99 inches.							
MEANS OF 3 PLOTS:	B. 47162	49.75	12.55	86.7	6.25	115.31	93
	*B. 41227	47.00	13.04	85.3	6.13	113.10	
	B. 47379	47.36	12.03	83.6	5.70	105.17	
	D. 158/41	46.29	12.06	83.4	5.58	102.95	
	D. 49/46	52.47	9.98	82.4	5.24	96.68	
	D. 183/46	38.39	13.42	87.6	5.15	95.02	
	D. 275/46	38.57	12.84	85.3	4.95	91.33	
	D. 133/46	35.30	12.46	85.0	4.40	81.18	
	Mean:				5.42	100.00	
	Significant Difference, 20:1:				—	—	
Sophia, Field 12 East. Reaped 11.xii.54 at 13.00 months. Rainfall:—175.72 inches.							
MEANS OF 4 PLOTS:	*B. 41227	49.69	14.09	89.5	7.00	130.35	94
	B. 49380	43.09	14.22	89.6	6.13	114.15	
	B. 4966	43.96	13.24	89.3	5.82	108.38	
	D. 10/44	45.88	12.63	86.7	5.79	107.82	
	B. 46351	41.23	13.78	89.3	5.68	105.77	
	B. 49122	41.61	12.97	89.4	5.40	100.56	
	B. 46136	38.68	13.93	89.9	5.39	100.37	
	B. 49354	39.08	13.64	87.5	5.33	99.26	
	B. 49355	38.22	13.77	89.4	5.26	97.95	
	B. 47225	40.56	12.74	87.1	5.17	96.28	
	B. 48372	41.08	12.33	84.6	5.07	94.41	
	B. 49377	37.70	13.43	86.8	5.06	94.23	
	B. 4942	35.91	14.03	89.4	5.04	93.85	
	B. 49388	35.12	12.69	85.5	4.46	83.05	
	B. 4945	33.67	11.91	86.4	4.01	74.67	
	Mean:				5.37	100.00	
	Significant Difference, 20:1:				.89	16.57	
Pln. Enmore, Field Paradise E. 4. Reaped 24.ii.54 at 16.00 months. Rainfall:—115.24 inches.							
MEANS OF 5 PLOTS:	*B. 41227	47.39	11.74	85.0	5.56	116.56	95
	B. 46369	54.16	9.89	83.1	5.36	112.37	
	D. 62/43	45.12	11.29	83.3	5.10	106.92	
	B. 46378	40.50	11.78	83.8	4.77	100.00	
	B. 46351	41.14	11.03	82.3	4.54	95.18	
	B.S. 4744	36.78	12.16	85.3	4.47	93.71	
	B. 46340	35.68	11.76	85.2	4.20	88.05	
	B. 46290	38.84	10.80	84.6	4.19	87.84	
	Mean:				4.77	100.00	
	Significant Difference, 20:1:				—	—	

*** Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Pln, L.B.I., Field 82 Success. Reaped 17.v.54 at 12.50 months. Rainfall:—131.66 inches.						
MEANS OF 5 PLOTS:	B. 47225	46.12	13.94	90.8	6.43	116.49	96
	*B. 41227	46.01	13.92	88.3	6.40	115.94	
	B. 45270	51.02	12.42	85.2	6.34	114.85	
	D. 58/43	49.52	12.02	83.3	5.95	107.79	
	D. 37/45	40.60	13.46	85.9	5.46	98.91	
	B. 45188	39.93	12.18	84.0	4.86	88.04	
	M. 423/41	40.33	11.09	82.0	4.47	80.98	
	D. 54/43	36.76	11.57	83.6	4.25	76.99	
	Mean:				5.52	100.00	
	Significant Difference, 20:1:				.55	9.96	
	Badly destroyed by Rats.						
	Pln. Lusignan, Field 34 A1 Reaped 13.x.54 at 15.75 months. Rainfall:—136.95 inches.						
MEANS OF 5 PLOTS:	B. 45270	44.53	13.20	86.6	5.88	116.67	97
	D. 58/43	42.30	13.50	87.0	5.71	113.29	
	*B. 41227	36.72	15.01	91.2	5.51	109.33	
	D. 4/43	35.71	15.31	89.9	5.47	108.53	
	B. 46218	33.10	16.17	90.0	5.35	106.15	
	D. 158/41	35.72	14.75	89.4	5.27	104.56	
	D. 54/43	32.28	13.96	88.1	4.51	89.48	
	B. 49388	33.59	12.52	81.1	4.20	83.33	
	B. 46290	24.81	14.06	90.1	3.49	69.25	
	Mean:				5.04	100.00	
	Significant Difference, 20:1:				1.09	21.63	

Results of Plant Cane Variety Trials on Berbice Frontland Clay.

	Pln. Port Mourant, Field A.E.W. 29. Reaped 20.i.54 at 12.50 months. Rainfall:—107.97 inches.						
MEANS OF 5 PLOTS:	B. 48372	33.96	14.23	85.7	4.83	109.52	98
	*B. 41227	31.70	15.10	90.4	4.79	108.62	
	B. 37161	33.01	14.34	91.2	4.73	107.26	
	B. 4893	31.21	13.93	90.0	4.35	98.64	
	B. 4847	31.13	13.90	88.2	4.33	98.19	
	B. 48384	29.38	14.72	88.5	4.32	97.96	
	B. 4895	28.01	14.92	88.7	4.18	94.78	
	B. 48375	25.50	14.73	88.3	3.76	85.26	
	Mean:				4.41	100.00	
	Significant Difference, 20:1:				—	—	

*** Standard Cane.**

TABLE III. (*Contd.*).—Results of Plant Cane Variety Trials on Berbice Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
Pln. Rose Hall, Field Tap. 26. Reaped 15.xii.54 at 12.50 months. Rainfall:—109.69 inches.							
MEANS OF 5 PLOTS:	*B. 41227	47.16	14.52	87.9	6.85	125.23	99
	B. 47258	37.82	15.47	89.7	5.85	106.95	
	D. 37/45	41.07	14.03	86.1	5.76	105.30	
	B. 47225	37.97	13.81	87.1	5.24	95.80	
	B. 4362	33.95	14.99	87.9	5.09	93.05	
	B. 45137	38.27	13.29	84.2	5.09	93.05	
	D. 158/41	34.79	14.35	85.5	4.99	91.22	
	M. 423/41	38.89	12.57	82.7	4.89	89.40	
	Mean:				5.47	100.00	
	Significant Difference, 20:1:				.81	14.81	
Results of Plant Cane Variety Trials on Riverside Clay.							
Pln. Blairmont, Field Riverside 8. Reaped 13.v.54 at 13.50 months. Rainfall:—86.53 inches.							
MEANS OF 5 PLOTS:	B. 46190	55.02	12.38	87.5	6.81	115.03	100
	*B. 41227	51.21	12.80	89.5	6.55	110.64	
	D. 4/43	53.75	11.82	85.9	6.35	107.26	
	D. 158/41	49.97	11.95	85.2	5.97	100.84	
	D. 54/43	51.42	11.53	84.8	5.93	100.17	
	B. 47225	48.56	11.98	87.9	5.82	98.31	
	B. 46218	39.08	13.78	88.6	5.39	91.05	
	B. 49388	46.90	9.73	80.3	4.56	77.03	
	Mean:				5.92	100.00	
	Significant Difference, 20:1:				.78	13.18	
Pln. Schoon Ord, Field G.F. "J". Reaped 18.ii.54 at 16.25 months. Rainfall:—150.68 inches.							
MEANS OF 5 PLOTS:	*B. 41227	55.79	13.22	87.1	7.37	125.98	101
	B. 46340	43.11	14.43	87.2	6.22	106.32	
	B. 46369	49.98	11.90	87.5	5.95	101.71	
	B. 4098	42.34	13.61	88.1	5.76	98.46	
	B. 46378	43.00	13.39	84.6	5.76	98.46	
	B. 46351	41.15	13.54	88.3	5.57	95.21	
	B. 4688	46.92	11.70	81.8	5.37	91.79	
	B. 46290	39.28	12.25	87.1	4.81	82.22	
	Mean:				5.85	100.00	
	Significant Difference, 20:1:				1.36	23.25	

*** Standard Cane.**

TABLE III. —(Contd.)—Results of Plant Cane Variety Trials on Pegassy Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
Pln. Diamond, Field 103/44 G.D. Reaped 17.viii.54 at 14.00 months. Rainfall:—138.68 inches.							
MEANS OF 5 PLOTS:	B. 47225	73.48	12.01	85.4	8.83	122.13	102
	D. 158/41	67.25	11.61	83.0	7.81	108.02	
	B. 45270	64.08	11.89	85.9	7.62	105.39	
	D. 37/45	57.68	12.99	86.8	7.49	103.60	
	D. 4/43	64.33	11.40	83.0	7.34	101.52	
	*B. 41227	64.93	11.27	83.3	7.32	101.24	
	D. 54/43	61.26	11.86	84.6	7.26	100.41	
	B. 46218	56.46	11.97	84.2	6.76	93.50	
	D. 58/43	56.40	11.20	81.4	6.32	87.41	
	B. 37161	47.97	11.49	86.3	5.51	76.21	
	Mean:				7.23	100.00	
	Significant Difference, 20:1:				.75	10.37	
Pln. Wales, Field 1 Sisters. Reaped 6.v.54 at 12.00 months. Rainfall:—126.10 inches.							
MEANS OF 5 PLOTS:	*B. 41227	32.96	14.58	90.5	4.81	114.80	103
	B. 37161	31.89	14.46	92.7	4.61	110.02	
	B. 47225	27.57	14.91	92.9	4.11	98.09	
	B. 47419	30.25	13.60	88.1	4.11	98.09	
	D. 58/43	31.69	11.99	82.7	3.80	90.69	
	D. 54/43	32.52	11.44	82.4	3.72	88.78	
	Mean:				4.19	100.00	
	Significant Difference, 20:1:				.62	14.80	

* Standard Cane.

C.—FIRST RATOON VARIETY TRIALS.

Twenty-seven First Ratoon variety trials were reaped in 1954. They are classified as follows :—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Demerara	53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73,	21
Frontland Clay—Berbice	74, 75, 76, 77.	4
Riverside Clay	78.	1
Pegassy Clay	22.	1

TABLE IV.—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre. Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre. Tons.	Trial No.
	Sophia, Field 8 East. Reaped 4.iii.54 at 12.25 months. Rainfall :—98.73 inches.								
MEANS OF 5 PLOTS :	B. 45137	42.57	13.46	88.3	5.73	125.11	B. 45137	14.10	55
	B. 46351	36.34	13.89	88.7	5.05	110.26	B. 41227	12.10	
	B. 37161	36.82	13.50	89.0	4.97	108.52	B. 4788	11.83	
	B. 46230	33.65	14.39	88.3	4.84	105.68	B. 46351	11.75	
	*B. 41227	34.52	13.87	89.2	4.79	104.59	B. 37161	11.58	
	B. 4788	32.73	14.20	89.0	4.65	101.53	B. 46230	11.35	
	B. 46378	32.58	14.21	88.6	4.63	101.09	B. 46136	11.16	
	B. 4764	32.68	14.13	88.7	4.62	100.87	B. 46378	11.14	
	B. 46136	29.76	14.90	89.9	4.43	96.72	B. 4764	11.06	
	B. 47179	36.74	11.36	81.3	4.17	91.05	B. 47179	10.69	
	B. 4098	27.42	14.38	89.0	3.94	86.03	B. 4098	9.94	
	B.S. 4743	23.00	13.43	85.6	3.09	67.47	B.S. 4743	9.11	
	Mean :				4.58	100.00			
	Significant Difference, 20 : 1 :				1.14	24.89			

* **Standard Cane.**

TABLE IV. (Contd.).—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre. Tons.	Trial No.
	Sophia, Field 11 West. Reaped 25.iii.54 at 12.25 months. Rainfall:—91.15 inches.								
MEANS OF 5 PLOTS:	D. 127/45	43.80	13.59	87.6	5.95	128.23	D. 127/45	13.82	56
	B. 37161	39.32	13.37	86.3	5.26	113.36	B. 37161	12.45	
	D. 159/45	35.66	14.29	88.0	5.10	109.91	D. 159/45	11.74	
	D. 27/45	33.82	15.06	88.3	5.09	109.70	D. 133/45	11.53	
	*B. 41227	36.82	13.53	85.8	4.98	107.33	D. 131/45	11.52	
	D. 18/45	34.57	14.32	87.6	4.95	106.68	D. 27/45	11.48	
	D. 138/45	34.18	14.25	86.4	4.87	104.96	B. 41227	11.48	
	D. 131/45	33.61	14.42	87.5	4.85	104.53	D. 18/45	10.87	
	D. 17/45	33.52	13.73	87.9	4.60	99.14	D. 62/45	10.82	
	D. 133/45	31.43	14.47	87.6	4.55	98.06	D. 145/45	10.45	
	D. 62/45	30.25	14.96	88.4	4.53	97.63	D. 17/45	10.04	
	D. 145/45	32.45	13.31	82.6	4.32	93.10	D. 121/45	9.84	
	D. 48/45	30.48	13.97	86.3	4.26	91.81	D. 118/45	9.70	
	D. 121/45	32.03	13.21	85.4	4.23	91.16	D. 138/45	9.65	
	D. 118/45	28.60	13.41	85.8	3.84	82.76	D. 48/45	9.21	
	D. 172/45	31.49	12.12	85.2	3.82	82.33	D. 172/45	9.10	
	D. 161/45	33.53	11.13	81.6	3.73	80.39	D. 161/45	8.73	
	Mean:				4.64	100.00			
	Significant Difference, 20:1:				1.10	23.71			
	Sophia, Field 12 West. Reaped 17.iii.54 at 11.25 months. Rainfall:—89.69 inches.								
MEANS OF 5 PLOTS:	D. 142/45	39.60	14.63	89.7	5.80	117.89	D. 153/45	12.61	57
	D. 153/45	42.89	13.39	86.5	5.74	116.67	D. 142/45	12.09	
	D. 127/45	38.22	14.06	87.7	5.37	109.15	D. 127/45	12.02	
	D. 135/45	37.62	14.15	88.1	5.32	108.13	D. 135/45	11.86	
	D. 151/45	41.59	12.59	84.4	5.24	106.50	*B. 41227	11.70	
	D. 150/45	39.38	13.22	86.2	5.20	105.69	D. 150/45	11.70	
	*B. 41227	36.93	14.05	86.2	5.19	105.49	D. 157/45	11.51	
	D. 144/45	40.79	12.59	85.0	5.13	104.27	D. 137/45	11.28	
	D. 137/45	39.76	12.80	86.0	5.09	103.46	D. 151/45	11.28	
	D. 129/45	39.85	12.66	87.7	5.05	102.64	D. 163/45	10.78	
	D. 157/45	38.63	12.81	87.6	4.95	100.61	D. 125/45	10.56	
	D. 125/45	37.09	13.18	88.9	4.89	99.39	D. 146/45	10.19	
	D. 163/45	36.94	13.04	84.9	4.82	97.97	D. 129/45	10.10	
	D. 149/45	32.39	14.38	88.5	4.66	94.72	D. 149/45	10.00	
	D. 169/45	34.32	13.35	87.9	4.58	93.09	D. 154/45	9.85	
	D. 166/45	35.81	12.24	87.3	4.38	89.02	D. 169/45	9.68	
	D. 146/45	33.44	12.53	85.4	4.19	85.16	D. 144/45	9.68	
	D. 120/45	31.46	12.92	84.7	4.06	82.52	D. 166/45	9.51	
	D. 154/45	29.61	12.96	85.7	3.84	78.05	D. 120/45	8.55	
	Mean:				4.92	100.00			
	Significant Difference, 20:1:				.73	14.84			

TABLE IV. (Contd.)—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

Variety.	Cane per Acre. Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre. Tons.	Trial No.
Sophia, Field 1 West "B". Reaped 30.viii.54 at 11.00 months. Rainfall:—139.56 inches.								
MEANS OF 5 PLOTS: *B. 41227	41.84	14.27	89.3	5.97	108.15	B. 41227	11.67	58
B. 47225	35.16	14.43	88.1	5.07	91.85	B. 47225	9.14	
Mean:				5.52	100.00			
Significant Difference, 20:1:				—	—			
Sophia, Field 1 West "A". Reaped 3.ix.54 at 11.00 months. Rainfall:—140.78 inches.								
MEANS OF 5 PLOTS: D. 62/43	48.41	12.95	86.9	6.27	115.05	D. 62/43	13.99	59
*B. 41227	37.48	13.45	87.8	5.04	92.48	B. 41227	10.89	
B. 4362	35.76	14.10	88.4	5.04	92.48	B. 4362	10.64	
Significant Difference, 20:1:				5.45	100.00			
Mean:				.49	8.99			
Sophia, Field 1/4 West "B". Reaped 7.x.54 at 11.75 months. Rainfall:—145.14 inches.								
MEANS OF 4 PLOTS: D. 259/46	41.85	13.82	87.5	5.78	111.80	D. 259/46	13.63	60
D. 106/46	36.43	15.18	89.2	5.53	106.96	D. 106/46	13.01	
*B. 41227	39.16	13.65	86.4	5.34	103.29	B. 41227	12.61	
D. 121/46	40.46	12.40	85.4	5.01	96.91	D. 121/46	10.36	
D. 275/46	33.09	12.74	83.8	4.21	81.43	D. 275/46	8.89	
Mean:				5.17	100.00			
Significant Difference, 20:1:				.86	16.63			
Sophia, Field 1/4 West "A". Reaped 12.x.54 at 12.00 months. Rainfall:—145.14 inches.								
MEANS OF 4 PLOTS: D. 39/46	46.63	12.66	88.0	5.90	111.11	D. 39/46	13.73	61
*B. 41227	38.36	14.08	88.5	5.40	101.69	B. 41227	13.26	
D. 175/46	35.45	14.01	88.8	4.97	93.60	D. 175/46	12.75	
D. 92/46	33.73	14.71	89.7	4.96	93.41	D. 92/46	12.71	
Mean:				5.31	100.00			
Significant Difference, 20:1:				—	—			

* **Standard Cane.**

TABLE IV. (Contd.)— **Results of a First Ratoon Variety Cultivation Trial (Normal Estate System) on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre,		Combined results for 2 Crops, Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Sophia, Field 3 East "B". Reaped 7.ix.54 at 12.00 months. Rainfall:—145.94 inches.								
MEANS OF 4 PLOTS :	B. 4098	45.01	13.57	88.3	6.11	113.15	D. 62/43	13.23	54
	*B. 41227	47.39	12.65	84.6	5.99	110.93	B. 41227	12.97	
	D. 158/41	44.28	13.24	86.7	5.86	108.52	D. 158/41	12.79	
	D. 62/43	41.76	13.77	87.5	5.75	106.48	B. 4098	11.84	
	B. 37161	40.46	13.24	89.6	5.36	99.26	B. 37161	11.45	
	D. 142/41	38.62	12.98	86.6	5.01	92.78	D. 142/41	10.24	
	B. 34104	31.17	12.02	86.8	3.75	69.44	B. 34104	9.19	
	Mean :				5.40	100.00			
	Significant Difference, 20 : 1 :				1.04	19.26			

Results of a First Ratoon Variety Cultivation Trial (Deep Drill System) on Demerara Frontland Clay.

	Sophia, Field 3 East "A". Reaped 10.ix.54 at 12.25 months. Rainfall:—145.95 inches.								
MEANS OF 4 PLOTS :	D. 62/43	53.56	13.92	87.2	7.45	126.70	D. 62/43	15.72	53
	B. 4098	44.85	13.51	87.4	6.06	103.06	D. 158/41	14.29	
	D. 158/41	45.80	13.06	86.0	5.98	101.70	B. 4098	14.10	
	B. 37161	47.50	12.07	85.5	5.73	97.45	D. 142/41	13.44	
	D. 142/41	40.55	13.79	85.9	5.59	95.07	B. 37161	13.31	
	*B. 41227	44.58	11.75	84.7	5.24	89.12	B. 41227	12.09	
	B. 34104	43.15	11.77	85.2	5.08	86.39	B. 34104	11.47	
	Mean :				5.88	100.00			
	Significant Difference, 20 : 1 :				1.19	20.24			

* **Standard Cane.**

TABLE IV. (Contd.)—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 15 East "B". Reaped 19.x.54 at 11.75 months. Rainfall:—144.97 inches.								
MEANS OF 4 PLOTS:	*B. 41227	35.67	13.43	87.1	4.79	106.21	B. 41227	11.96	62
	B. 37161	34.66	13.52	88.6	4.69	103.99	B. 37161	10.72	
	D. 183/46	29.86	13.60	90.1	4.06	90.02	D. 183/46	9.09	
	Mean:				4.51	100.00			
	Significant Difference, 20 : 1:				—	—			
	Sophia, Field 15 East "A". Reaped 21.x.54 at 11.50 months. Rainfall:—144.48 inches.								
MEANS OF 4 PLOTS:	D. 141/46	41.83	15.13	87.9	6.33	122.44	D. 141/46	15.68	63
	D. 49/46	42.76	13.42	86.1	5.74	111.02	D. 49/46	12.72	
	B. 37161	36.89	13.53	87.2	4.99	96.52	B. 37161	12.00	
	D. 106/46	31.68	15.49	88.8	4.90	94.78	D. 106/46	11.53	
	D. 91/46	32.18	14.55	89.4	4.68	90.52	B. 41227	11.11	
	*B. 41227	32.51	13.52	85.4	4.39	84.91	D. 91/46	11.06	
	Mean:				5.17	100.00			
	Significant Difference, 20 : 1:				.87	16.83			
	Sophia, Field 14 East "B". Reaped 27.x.54 at 11.75 months. Rainfall:—146.23 inches.								
MEANS OF 4 PLOTS:	B. 37161	34.27	13.49	90.5	4.62	101.32	B. 41227	12.34	64
	*B. 41227	38.58	11.67	86.1	4.50	98.68	B. 37161	11.60	
	Mean:				4.56	100.00			
	Significant Difference, 20 : 1:				—	—			
	Sophia, Field 14 East "A". Reaped 29.x.54 at 11.75 months. Rainfall:—146.27 inches.								
MEANS OF 4 PLOTS:	B. 37161	36.06	14.94	90.0	5.39	105.89	B. 41227	12.85	65
	*B. 41227	36.39	13.58	89.6	4.94	97.05	B. 37161	12.15	
	D. 133/46	36.91	13.34	89.3	4.93	96.86	D. 133/46	11.59	
	Mean:				5.09	100.00			
	Significant Difference, 20 : 1:				—	—			

* Standard Cane.

TABLE IV. (Contd.)—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 11 East "B". Reaped 4.xi.54 at 11.75 months. Rainfall:—155.00 inches.								
	D. 62/43	35.70	13.62	86.5	4.86	108.00	B. 41227	13.09	
	*B. 41227	34.83	13.58	88.0	4.73	105.11	D. 62/43	12.95	
MEANS OF 4 PLOTS:	B. 48372	28.75	13.56	84.7	3.90	86.67	B. 48372	11.26	66
	Mean:				4.50	100.00			
	Significant Difference, 20 : 1:				—	—			
	Sophia, Field 11 East "A". Reaped 11.xi.54 at 11.75 months. Rainfall:—157.61 inches.								
	*B. 41227	34.49	12.77	85.6	4.40	106.54	D. 62/43	11.68	
MEANS OF 4 PLOTS:	D. 62/43	32.54	11.87	82.8	3.86	93.46	B. 41227	11.56	67
	Mean:				4.13	100.00			
	Significant Difference, 20 : 1:				—	—			
	Sophia, Field 9 East "A". Reaped 3.xii.54 at 12.50 months. Rainfall:—173.56 inches.								
	D. 62/43	34.83	12.45	86.0	4.34	103.58	D. 62/43	12.71	
	*B. 41227	33.20	12.90	87.2	4.28	102.15	B. 41227	11.96	
MEANS OF 4 PLOTS:	B.S. 4744	28.82	13.71	90.0	3.95	94.27	B.S. 4744	11.06	69
	Mean:				4.19	100.00			
	Significant Difference, 20 : 1:				—	—			
	Sophia, Field 9 East "B". Reaped 3.xii.54 at 12.50 months. Rainfall:—173.84 inches.								
	D. 62/43	36.79	13.14	86.9	4.83	109.28	B. 41227	12.29	
	*B. 41227	33.28	13.70	88.7	4.56	103.17	D. 62/43	12.07	
	B. 48372	34.05	12.81	86.1	4.36	98.64	B. 48372	11.56	
MEANS OF 4 PLOTS:	B.S. 4733	31.42	12.53	86.6	3.94	89.14	B.S. 4733	9.02	68
	Mean:				4.42	100.00			
	Significant Difference, 20 : 1:				.58	13.12			

* Standard Cane.

TABLE IV. (Contd.)— **Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No
Pln. L.B.I., Field Brothers 13. Reaped 13.x.54 at 10.25 months. Rainfall:—94.33 inches.									
MEANS OF 5 PLOTS:	B. 37161	33.89	13.18	84.1	4.47	102.76	B. 41227	12.70	73
	*B. 41227	34.17	13.06	82.9	4.46	102.53	B. 46351	10.81	
	B. 46351	36.59	12.17	78.8	4.45	102.30	B. 37161	10.19	
	B. 45151	34.44	11.70	79.8	4.03	92.64	B. 45151	10.18	
	Mean:				4.35	100.00			
	Significant Difference, 20:1:				—	—			
Pln. Leonora, Field A.C.S. 45 C.I. Reaped 30.iii.54 at 11.50 months. Rainfall:—91.05 inches.									
MEANS OF 4 PLOTS:	*B. 41227	33.43	15.14	88.9	5.06	116.32	B. 4098	13.05	70
	B. 37161	32.81	15.39	88.6	5.05	116.09	B. 41227	12.83	
	B. 4098	31.56	15.49	87.7	4.89	112.41	B. 4764	12.06	
	B. 46351	29.69	15.62	87.5	4.64	106.67	B. 37161	10.60	
	B. 4764	28.84	14.95	88.0	4.31	99.08	B. 46351	10.52	
	B. 46136	26.46	14.87	87.0	3.80	87.36	B. 46136	10.22	
	B. 46230	25.47	14.01	85.0	3.57	82.07	B. 46230	8.42	
	B. 47179	26.41	13.21	87.8	3.49	80.23	B. 47179	7.71	
	Mean:				4.35	100.00			
	Significant Difference, 20:1:				1.03	23.68			
Pln. Lusignan, Field 103 A.W. Reaped 16.xii.54 at 13.00 months. Rainfall:—110.59 inches.									
MEANS OF 5 PLOTS:	B. 37161	38.30	13.65	90.5	5.23	119.41	B. 41227	12.17	72
	*B. 41227	39.38	11.90	85.8	4.68	106.85	B.S. 4747	10.82	
	B.S. 4747	34.98	11.91	86.2	4.16	94.98	B. 37161	10.69	
	B.S. 4744	34.01	10.20	77.5	3.47	79.22	B.S. 4744	10.08	
	Mean:				4.38	100.00			
	Significant Difference, 20:1:				.96	21.92			
Pln. Ogle, Field 3 Industry. Reaped 21.x.54 at 11.50 months. Rainfall:—103.58 inches.									
MEANS OF 5 PLOTS:	*B. 41227	43.68	13.22	85.4	5.77	112.04	B. 41227	13.45	71
	B. 37161	35.39	14.50	86.9	5.13	99.61	B. 37161	11.73	
	B.S. 4744	36.82	12.38	85.4	4.56	88.54	B.S. 4744	10.46	
	Mean:				5.15	100.00			
	Significant Difference, 20:1:				.91	17.67			

* **Standard Cane.**

TABLE IV. (Contd.)— **Results of First Ratoon Variety Trials on Berbice Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. Rose Hall, Field S. 37. Reaped 25.iii.54 at 10.75 months. Rainfall:—68.27 inches.								
MEANS OF 4 PLOTS:	*B. 41227	46.50	13.82	86.4	6.42	142.67	B. 41227	11.64	75
	B. 46378	42.30	13.24	86.7	5.60	124.44	B. 46103	10.23	
	B. 37161	40.12	13.40	90.1	5.37	119.33	B. 46308	10.03	
	B. 46190	37.80	13.38	84.1	5.05	112.22	B. 46378	10.02	
	B. 46103	34.30	13.97	87.5	4.79	106.44	B. 37161	9.93	
	B. 46308	36.50	13.08	85.8	4.77	106.00	B.S. 4747	9.72	
	B.S. 4747	35.41	13.13	83.7	4.65	103.33	B. 46190	9.42	
	B. 46295	31.43	13.30	84.4	4.18	92.89	B. 46218	9.02	
	B. 46218	29.55	13.95	87.6	4.12	91.56	B. 45156	8.76	
	B. 45156	32.13	12.48	84.8	4.01	89.11	B. 46295	8.68	
	B. 4502	27.53	14.29	87.0	3.93	87.33	B. 4553	8.52	
	B. 4553	29.25	13.24	85.6	3.87	86.00	B. 46384	8.22	
	B. 46384	27.53	13.45	87.3	3.70	82.22	B. 4502	7.56	
	B. 46144	28.79	12.84	85.2	3.70	82.22	B. 46144	7.47	
	B. 4681	24.84	13.36	87.3	3.32	73.78	B. 4681	6.54	
	Mean:				4.50	100.00			
	Significant Difference, 20:1:				.89	19.78			
	Pln. Port Mourant, Field R.O.G. 9. Reaped 26.v.54 at 13.00 months. Rainfall:—72.21 inches.								
MEANS OF 4 PLOTS:	*B. 41227	32.22	14.33	88.1	4.62	118.16	B. 41227	11.26	74
	B. 45137	33.33	13.43	86.8	4.47	114.32	B. 37161	10.44	
	B. 46378	29.79	13.69	85.8	4.08	104.35	B. 45151	10.41	
	B. 47314	30.15	13.41	86.1	4.04	103.32	B. 45137	10.19	
	B. 45151	31.06	12.84	85.2	3.99	102.05	B. 46378	9.89	
	B. 37161	30.78	12.32	86.2	3.79	96.93	B.S. 4733	9.69	
	B.S. 4733	29.06	12.16	85.5	3.53	90.28	B. 47314	9.51	
	B. 47298	24.77	13.81	86.5	3.42	87.47	B.S. 4747	9.49	
	B.S. 4747	25.34	12.88	85.2	3.26	83.38	B. 47298	8.81	
	Mean:				3.91	100.00			
	Significant Difference, 20:1:				1.14	29.16			
	Pln. Rose Hall, Field Prospect 2. Reaped 13.x.54 at 10.25 months. Rainfall:—97.78 inches.								
MEANS OF 5 PLOTS:	B. 47258	36.46	16.50	88.3	6.02	113.37	B. 47258	13.21	76
	B. 4098	34.43	15.80	87.5	5.44	102.45	B. 4098	11.54	
	B. 4764	34.88	15.56	87.1	5.43	102.26	B. 4764	11.51	
	*B. 41227	33.04	15.90	88.7	5.25	98.87	B. 41227	10.83	
	B. 47379	31.44	14.04	86.3	4.41	83.05	B. 47379	10.25	
	Mean:				5.31	100.00			
	Significant Difference, 20:1:				.75	14.12			

* **Standard Cane.**

TABLE IV. (Contd.)—**Results of First Ratoon Variety Trials on Berbice Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. Albion, Field N, 15 W.S. Reaped 10.xii.54 at 11.25 months. Rainfall:—97.69 inches.								
MEANS OF 5 PLOTS:	B.S. 4744	49.13	13.22	85.3	6.49	104.51	B. 41227	15.02	77
	*B. 41227	46.37	13.54	85.6	6.28	101.13	B.S. 4744	14.93	
	B. 37161	47.41	12.38	85.4	5.87	94.52	B. 37161	14.41	
	Mean:				6.21	100.00			
	Significant Difference, 20 : 1 :				—	—			
	Results of a First Ratoon Variety Trial on Riverside Clay.								
	Pln. Farm, Field 61 Prospect. Reaped 7.x.54 at 11.25 months. Rainfall:—116.08 inches.								
MEANS OF 5 PLOTS:	B.S. 4744	44.86	13.21	86.0	5.92	109.02	B. 41227	11.85	78
	*B. 41227	42.23	13.81	87.2	5.83	107.37	B.S. 4744	11.53	
	B.S. 4747	46.18	12.62	82.6	5.83	107.37	B.S. 4747	11.27	
	B. 37161	35.20	14.47	89.0	5.09	93.74	B.S. 4710	10.58	
	B.S. 4710	35.31	12.72	83.1	4.49	82.69	B. 37161	9.45	
	Mean:				5.43	100.00			
	Significant Difference, 20 : 1 :				.87	16.02			
	Results of a First Ratoon Variety Trial on Pegassy Clay.								
	Pln. Blairmont, Field 14 L.S. Abary. Reaped 23.ii.54 at 13.75 months. Rainfall:—114.12 inches.								
MEANS OF 4 PLOTS:	B.S. 4711	49.45	13.25	86.6	6.55	126.94	B.S. 4711	11.75	22
	B. 4764	46.11	13.02	85.0	6.00	116.28	B. 4764	11.22	
	B. 45137	44.79	12.13	85.5	5.43	105.23	B. 45137	10.17	
	B.S. 4747	45.73	11.05	80.5	5.05	97.87	B.S. 4747	10.13	
	B. 37161	42.22	11.83	85.1	4.99	96.71	B. 41227	9.99	
	*B. 41227	39.04	12.45	84.0	4.86	94.19	B. 46378	9.59	
	B. 47419	36.51	11.79	82.1	4.30	83.33	B. 37161	9.47	
	B. 46378	38.12	11.53	80.1	4.11	79.65	B. 47419	9.32	
	Mean:				5.16	100.00			
	Significant Difference, 20 : 1 :				1.44	27.91			

***Standard Cane.**

D.—SECOND AND THIRD RATOON VARIETY TRIALS.

Eighteen Second and Third Ratoon Variety Trials were reaped in 1954 as follows :—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Demerara	..... 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 79.	12
Frontland Clay—Berbice	..... 17, 18, 19.	3
Riverside Clay	..... 20, 21.	2
Pegassy Clay	..... 22.	1

TABLE V.—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Sophia, Field 16 East "B". Reaped 30.iii.54 at 11.25 months. Rainfall:—87.87 inches.									
MEANS OF 4 PLOTS:	D. 56/45	27.09	16.56	89.1	4.49	108.19	B. 41227	16.72	6
	D. 94/45	30.30	14.75	88.1	4.47	107.71	D. 94/45	16.24	
	*B. 41227	30.71	14.56	86.6	4.47	107.71	D. 56/45	15.66	
	D. 18/45	21.50	14.70	86.4	3.16	76.14	D. 18/45	14.41	
	Mean :				4.15	100.00			
	Significant Difference, 20:1:				—	—			
Sophia, Field 16 East "A". Reaped 31.iii.54 at 11.25 months. Rainfall:—87.70 inches.									
MEANS OF 4 PLOTS:	*B. 41227	41.69	16.99	89.1	7.08	135.63	B. 41227	20.49	7
	B. 40105	20.16	16.70	88.3	3.37	64.56	B. 40105	13.25	
	Mean :				5.22	100.00			
	Significant Difference, 20:1:				2.47	47.32			
Sophia, Field 10 West "B". Reaped 2.iv.54 at 11.25 months Rainfall:—87.48 inches.									
MEANS OF 4 PLOTS:	*B. 41227	33.83	16.38	89.5	5.54	103.17	B. 41227	19.67	11
	D. 4/43	34.73	15.71	89.5	5.45	101.49	D. 4/43	18.77	
	B. 4373	34.27	15.77	87.3	5.40	100.56	B. 4373	18.39	
	B. 46378	31.79	16.02	88.8	5.09	94.79	B. 46378	17.13	
	Mean :				5.37	100.00			
	Significant Difference. 20:1:				—	—			

*Standard Cane.

TABLE V. (Contd.)— **Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops. Plants, 1st Ratoons and 2nd Ratoons. Variety.	Combined results for 3 Crops. Plants, 1st Ratoons and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 10 West "A". Reaped 5.iv.54 at 11.25 months. Rainfall:—83.58 inches.								
MEANS OF 4 PLOTS:	B. 4688	35.74	15.16	87.9	5.42	101.88	B. 41227	20.50	10
	B. 46351	32.86	16.41	89.5	5.39	101.32	B. 4688	19.93	
	*B. 41227	32.05	16.10	89.1	5.16	96.99	B. 46351	19.71	
	Mean:				5.32	100.00			
	Significant Difference, 20:1:				—	—			
	Sophia, Field 10 East "B". Reaped 6.iv.54 at 11.00 months. Rainfall:—82.25 inches.								
MEANS OF 4 PLOTS:	*B. 41227	36.24	15.20	88.3	5.51	123.82	D. 133/46	16.10	8
	D. 133/46	34.85	14.76	88.5	5.14	115.51	B. 41227	15.92	
	D. 113/46	32.50	15.79	89.7	5.13	115.28	D. 17/46	13.75	
	D. 267/46	34.65	14.10	85.0	4.88	109.66	D. 277/46	11.01†	
	D. 277/46	32.35	14.96	87.5	4.84	108.76	D. 141/46	10.46†	
	D. 280/46	27.54	15.99	89.8	4.41	99.10	D. 113/46	9.56†	
	D. 290/46	25.37	16.23	89.7	4.12	92.58	D. 267/46	9.42†	
	D. 141/46	26.85	15.17	88.8	4.07	91.46	D. 290/46	9.42†	
	D. 17/46	26.72	15.16	88.7	4.05	91.01	D. 1/46	9.13†	
	D. 1/46	25.91	14.34	88.7	3.71	83.37	D. 280/46	8.90†	
	D. 271/46	20.91	14.88	87.3	3.11	69.89	D. 271/46	7.40†	
	Mean:				4.45	100.00			
	Significant Difference, 20:1:				—	—			
	Sophia, Field 10 East "A". Reaped 8.iv.54 at 11.00 months. Rainfall:—81.77 inches.								
MEANS OF 3 PLOTS:	*B. 41227	32.58	16.93	89.3	5.52	121.59	B. 41227	17.42	9
	D. 233/46	22.26	16.05	89.5	3.57	78.63	D. 233/46	14.66	
	Mean:				4.54	100.00			
	Significant Difference, 20:1:				—	—			

***Standard Cane.**

†Results for 1st and 2nd Ratoons only.

TABLE V. (Contd.)—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 16 West. Reaped 5.x.54 at 10.25 months. Rainfall:—143.96 inches.								
MEANS OF 4 PLOTS:	B. 37161	25.62	14.91	89.5	3.82	129.05	B. 47258	15.18	79
	B. 45137	23.61	14.98	88.9	3.54	119.59	B. 37161	13.96	
	B. 46378	22.97	14.43	87.0	3.31	118.82	B. 45137	13.59	
	B. 47258	22.68	14.43	86.8	3.27	110.47	B. 46378	13.15	
	*B. 41227	22.46	14.45	86.8	3.24	109.46	B. 41227	12.68	
	B. 47399	18.36	12.94	84.3	2.37	80.07	B. 47399	12.33	
	B. 4764	14.01	15.04	88.1	2.11	71.28	B. 4764	11.71	
	B.S. 4747	15.26	13.16	84.2	2.01	67.91	B.S. 4747	10.32	
	Mean:				2.96	100.00			
	Significant Difference, 20:1:				.59	19.93			
	Sophia, Field 13 West "A". Reaped 16.x.54 at 11.75 months. Rainfall:—149.65 inches.								
MEANS OF 5 PLOTS:	D. 2/46	35.09	15.67	88.9	5.50	109.34	B. 41227	18.83	13
	*B. 41227	33.86	13.51	88.1	4.57	90.85	D. 2/46	18.67	
	Mean:				5.03	100.00			
	Significant Difference, 20:1:				—	—			
	Sophia, Field 13 West "B". Reaped 16.x.54 at 12.00 months. Rainfall:—151.29 inches.								
MEANS OF 5 PLOTS:	D. 39/46	42.99	13.76	88.7	5.91	118.44	D. 39/46	20.13	12
	D. 62/45	36.12	15.47	90.0	5.59	112.02	D. 62/45	19.35	
	*B. 41227	33.54	14.69	88.1	4.93	98.80	B. 41227	18.65	
	D. 247/46	32.19	15.01	87.8	4.83	96.79	D. 184/46	18.63	
	D. 184/46	31.02	15.47	90.3	4.80	96.19	D. 250/46	18.14	
	D. 145/45	33.12	14.08	84.3	4.66	93.39	D. 247/46	17.67	
	D. 250/46	30.08	13.92	85.7	4.19	83.97	D. 145/45	17.40	
	Mean:				4.99	100.00			
	Significant Difference, 20:1:				.70	14.03			

*Standard Cane.

TABLE V. (Contd.)—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Plm. L.B.I., Field A.55 C.M. Reaped 22.ix.54 at 13.00 months. Rainfall:—100.96 inches.									
MEANS OF 5 PLOTS:	B. 4373	30.16	13.68	85.2	4.12	125.61	B. 4373	12.72	14
	B. 43413	28.44	13.54	85.3	3.85	117.38	D. 37/45	12.45	
	D. 37/45	28.62	13.24	85.9	3.79	115.55	B. 43413	12.39	
	B. 43214	29.94	12.62	84.4	3.78	115.24	B. 43214	12.02	
	*B. 41227	23.61	12.16	85.3	2.87	87.50	B. 41227	11.56	
	B. 46378	19.42	13.13	84.5	2.55	77.74	B. 46378	8.47	
	B. 37161	18.58	10.59	81.8	1.97	60.06	B. 37161	7.30	
	Mean:				3.28	100.00			
	Significant Difference, 20 : 1 :				.44	13.41			
Plm. Lusignan, Field 62 M.X.E. Reaped 1.ix.54 at 12.50 months. Rainfall:—111.22 inches.									
MEANS OF 5 PLOTS:	B. 43413	40.29	13.36	86.8	5.38	115.70	B. 43413	16.46	15
	B. 41227	39.15	13.11	86.0	5.13	110.32	B. 41227	15.77	
	B. 34104	28.88	11.87	86.1	3.43	73.76	B. 34104	12.52	
	Mean:				4.65	100.00			
	Significant Difference, 20 : 1 :				.59	12.69			
Plm. Lusignan, Field G.H.E. 26 "B". Reaped 10.ix.54 at 11.25 months. Rainfall:—108.91 inches.									
MEANS OF 5 PLOTS:	D. 37/45	46.10	13.88	87.6	6.40	114.29	D. 37/45	20.76	16
	B. 43214	46.12	13.76	87.0	6.34	113.21	B. 43214	19.58	
	B. 4362	43.10	13.79	88.0	5.94	106.07	B. 4362	19.16	
	*B. 41227	43.86	13.26	88.2	5.82	103.93	B. 4373	18.33	
	B. 4373	39.13	13.57	85.5	5.32	95.00	D. 4/43	17.36	
	B. 37161	38.25	13.19	88.7	5.04	90.00	B. 37161	17.20	
	D. 4/43	39.70	12.65	87.4	5.02	89.64	B. 41227	17.07	
	B. 46378	39.39	12.58	85.3	4.95	88.39	B. 46378	15.79	
	Mean:				5.60	100.00			
	Significant Difference, 20 : 1 :				1.04	18.57			

*Standard Cane.

TABLE V. (Contd.)—**Results of Second Ratoon Variety Trials on Berbice Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Pln. Albion, Field Hampshire 2. Reaped 1.xii.54 at 11.75 months. Rainfall:—99.82 inches.									
MEANS OF 4 PLOTS:	*B. 41227	39.40	13.92	86.7	5.48	120.70	B. 41227	20.12	17
	B. 46351	40.39	13.17	85.5	5.32	117.18	B. 37161	18.58	
	B. 37161	35.11	13.31	88.8	4.67	102.86	B. 46351	17.02	
	B. 46290	37.55	11.86	84.0	4.45	98.02	B. 46340	14.81	
	B. 46378	31.44	13.51	84.8	4.24	93.39	B. 46290	14.16	
	B. 46340	29.89	13.75	86.6	4.11	90.53	B. 46103	14.04	
	B. 46103	26.55	13.14	86.9	3.49	76.87	B. 46378	13.92	
	Mean:				4.54	100.00			
	Significant Difference, 20 : 1 :				—	—			
Pln. Port Mourant, Field R.E. 6 W.S. Reaped 9.ii.54 at 10.25 months. Rainfall:—52.92 inches.									
MEANS OF 5 PLOTS:	*B. 41227	27.77	13.69	86.7	3.80	117.66	B. 41227	17.00	18
	B. 34104	26.18	13.80	88.7	3.61	111.76	B. 43413	15.43	
	B. 43214	26.42	13.40	83.4	3.54	109.60	D. 37/45	15.05	
	B. 43413	26.55	11.89	85.1	3.16	97.83	B. 43214	14.68	
	D. 37/45	23.11	11.94	85.3	2.76	85.45	B. 4373	13.93	
	B. 4373	20.29	12.40	83.6	2.52	78.02	B. 34104†	9.22	
	Mean:				3.23	100.00			
	Significant Difference, 20 : 1 :				.80	24.77			

Results of a Third Ratoon Variety Trial on Berbice Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 3rd Ratoons.** Variety.	Combined results for 3 Crops, Plants, 1st and 3rd Ratoons.** Sucrose in Cane per Acre, Tons.	Trial No.
Pln. Rose Hall, Field 82 Reliance. Reaped 12.xi.54. Rainfall:—102.76 inches.									
MEANS OF 5 PLOTS:	B. 4214	31.52	14.99	84.3	4.72	121.65	B. 41227	17.47	19
	*B. 41227	33.08	13.67	83.5	4.52	116.49	D. 62/43	15.48	
	B. 43413	29.72	12.65	80.0	3.76	96.91	B. 43413	14.21	
	D. 62/43	25.81	12.99	81.2	3.35	86.34	B. 4373	13.28	
	B. 4373	22.74	12.96	80.8	2.95	76.03	††B. 4214	11.15	
	Mean:				3.88	100.00			
	Significant Difference, 20 : 1 :				.96	24.87			

* **Standard Cane.**
† **Results for Plants and 2nd Ratoons.**
** **Second Ratoons reaped by Estate.**
†† **Results for Plants and 3rd Ratoons only.**

TABLE V. (Contd.)—Results of Second Ratoon Variety Trials on Riverside Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. Diamond, Field 116 W.S. Reaped 19.x.54 at 10.50 months. Rainfall:—128.05 inches.								
MEANS OF 4 PLOTS:	*B. 41227	40.83	13.77	88.6	5.62	111.07	B. 41227	20.06	21
	B. 46290	42.37	12.85	88.3	5.44	107.51	B. 37161	19.36	
	B. 46378	41.71	12.87	84.8	5.37	106.13	B. 46351	19.17	
	B. 46351	37.32	13.95	86.9	5.21	102.96	B. 46378	16.95	
	B. 45151	36.31	13.27	86.8	4.82	95.26	B. 45151	16.79	
	B. 37161	34.79	13.70	90.2	4.77	94.27	B. 46290	16.63	
	B. 46340	32.14	12.93	85.8	4.16	82.21	B. 46340	14.90	
	Mean:				5.06	100.00			
	Significant Difference, 20 : 1:				—	—			
	Pln. Diamond, Field 23/5 G.D. Reaped 13.viii.54 at 11.50 months. Rainfall:—170.26 inches.								
MEANS OF 5 PLOTS:	D. 37/45	37.95	14.18	89.2	5.38	117.72	D. 37/45	19.35	20
	B. 4373	35.27	14.84	86.8	5.23	114.44	B. 4098	18.73	
	B. 4098	34.26	14.35	89.4	4.92	107.66	B. 43413	17.76	
	B. 43413	32.35	14.88	88.5	4.82	105.47	B. 41227	17.31	
	*B. 41227	34.36	13.55	88.5	4.66	101.97	B. 4373	16.82	
	B. 46378	28.36	12.58	84.9	3.57	78.12	B. 37161	13.70	
	B. 37161	25.21	13.31	89.6	3.39	74.18	B. 46378	13.36	
	Mean:				4.57	100.00			
	Significant Difference, 20 : 1:				.67	14.66			

Results of a Second Ratoon Variety Trial on Pegassy Clay.

	Pln. Blairmont, Field 14 L.S. Abary. Reaped 7.vii.54 at 9.50 months. Rainfall:—98.79 inches.								
MEANS OF 4 PLOTS:	B. 45137	31.13	14.65	89.6	4.56	126.32	B.S. 4711	15.16	22
	B. 46378	26.43	13.88	87.8	3.67	101.66	B. 45137	14.73	
	B.S. 4747	26.93	13.47	86.8	3.63	100.55	B. 4764	14.56	
	B.S. 4711	25.07	13.60	88.4	3.41	94.46	B.S. 4747	13.76	
	B. 4764	24.00	13.91	88.1	3.34	92.52	B. 41227	13.32	
	B. 37161	24.91	13.37	90.3	3.33	92.24	B. 46378	13.26	
	*B. 41227	25.32	13.17	88.4	3.33	92.24	B. 37161	12.80	
	Mean:				3.61	100.00			
	Significant Difference, 20 : 1:				.59	16.34			

***Standard Cane.**

E.—VARIETY PERFORMANCE SUMMARY.

Varieties under test in 1954 are discussed under the following captions :—

1. Standard Canes.
2. Barbados and Demerara Seedlings produced prior to the 1944 Series.
3. Barbados and Demerara Seedlings of the 1944, 1945 and 1946 Series.
4. Barbados Seedlings of the 1947 and 1948 Series.
5. Barbados Seedlings of the 1949 and 1950 Series.
6. Other Varieties.

1. Standard Canes.

The two varieties B.41227 and B.37161, continue to be used as the standard canes for variety trials. Little can be added to the remarks made on these two canes in the previous Bulletin (No. 22, pages 29—30) to which reference is invited. Both varieties, but particularly B.37161, stood up well to the very high rainfall of 1954. Where their yields under commercial conditions were below average, the absence of adequate cultivation and more particularly of irrigation owing to the strike of 1953, were mainly responsible. It should be noted however, that B.41227 has not performed as well on the estates in 1954 as previously. On the other hand, its performance in the trials laid down by the Experiment Station staff continued to follow the pattern of previous years.

In general in trials, there is little to choose between these varieties, the B.41227 being somewhat better than B.37161 on clays while the latter is slightly the better on pegasse. The indications are that B.41227 has a more specific rainfall requirement than B.37161. B.41227 also appears to build up sucrose almost continuously up to thirteen to fourteen months age and should not be reaped under twelve months, while B.37161 appears to attain maturity between ten and twelve months and should not be allowed to grow beyond twelve months *where arrowing has occurred.*

In this connection, it should be noted that under the climatic conditions of 1954, B.37161 arrowed more heavily than is usual for this variety.

2. Barbados and Demerara Seedlings produced prior to the 1944 Series.

B.34104 (Co. 281 x B.H. 10/12).

Trial Nos. : 15, 18, 53, 54.

B.4098 (B.3439 x Co. 290).

Trial Nos. : 20, 51, 53, 54, 55, 70, 76, 101.

This variety does not stand up well to dry conditions and would be expected to tolerate the very wet conditions that obtained in 1954. In general this expectation was realised.

In tests, B.4098 continues to be inferior to B.41227 in yield of sugar per acre although slightly better than this standard in Pol. % Cane. It does not generally do well on pegasse soils, and its yield as ratoons is frequently disappointing. There is a possibility that this might be due to the presence of ratoon stunting disease although this has still to be proved.

B.4098 continues to be fairly heavily attacked by borer.

B.4362 (B.37161 x P.O.J. 2878).

Trial Nos. : 16, 51, 59, 92, 99.

In trials reaped to date, B.4362 is in general inferior to B.41227 in tons sugar per acre although this variety possesses a higher Pol. % Cane and Juice Purity than the standard. It appears to be best suited to the intermediate pegassy clays, and to be an early ripening variety. Ratoon yields are often disappointing, possibly for the same reasons suggested for B.4098.

B.4362 is often fairly heavily attacked by borer and is very susceptible to Chlorotic Streak disease.

B.4373 (B.3354 x Co. 290)

Trial Nos. : 11, 14, 16, 18, 19, 20, 51.

B.4373 has been reaped in nine trials as plants and first ratoons, and in eight as second ratoons. In general it is inferior to B.41227 in yield of sugar per acre, and about its equal in Pol. % Cane and Juice Purity. It is resistant to Leaf Scald and on the basis of the trials reaped to date it appears to be at least equal to the present popular leaf scald resistant variety, B.4098, on Clays. Like B.4098 its yield relative to B.41227 appears to fall rapidly from the second ratoon stage. Comments as to its suitability to pegassy soils must await the reaping of trials in 1955.

B.4373 is moderately susceptible to Chlorotic Streak disease.

B.43214 (B.3353 x Co. 290)

Trial Nos. : 14, 16, 18.

This variety is being further tested against B.41227.

B.43253 (B.3439 x B.37175).

As mentioned in Bulletin No. 22, this variety is being further tested and a number of trials are scheduled for reaping in 1955. While its yield of sugar per acre is below that of the standard, B.43253 is a leaf scald resistant variety having a juice of high quality under local conditions, and (as mentioned previously) is worthy of moderate extension on estates with an ample supply of land but having a factory of low capacity.

B.43413 (M.D. 47 x Co. 290).

Trial Nos. : 14, 15, 18, 19, 20, 92.

This variety continues to do well in trials and is again recommended for moderate extension on clay soils where it appears to be about equal to B.41227 in tons sugar per acre although its Pol. content is slightly less than that of the standard.

B.43413 has outyielded B.41227 in three out of eight reapings as Plants, once significantly; in four out of eight reapings as First Ratoons, once significantly and in four out of eight reapings as Second Ratoons, twice significantly. It has been beaten significantly by the Standard once as Plants and twice as First Ratoons.

B.43413 is rated as tolerant to Leaf Scald Disease.

D.158/41 (Co. 421 x D.166/34).

Trial Nos. : 53, 54, 93, 97, 99, 100, 102.

This variety has shewn up well against B.34104 in the past and is being further tested against B.41227. In tests reaped to date it appears about the equal of the standard in tons sugar per acre. Its Pol. % Cane is slightly below the standard as Plants but slightly above as ratoons. D.158/41 is a vigorous grower giving high yields on some areas. A heavy-arrowing variety, it does best as an Autumn cane and appears to prefer a moderate rainfall. At Sophia and in the few experiments in which it has been reaped as ratoons, it has shewn itself a strong ratooner but further confirmation of this is necessary.

D.158/41 is tolerant to Leaf Scald Disease.

D.4/43 (D.200/36 x Diamond 10).

Trial Nos. : 11, 16, 84, 85, 97, 100, 102.

This variety is a vigorous grower with a Pol. % Cane and juice of average quality. It arrows heavily however, and should not be planted for reaping in the Spring Crop as the juice quality is generally poor under these conditions, particularly if heavy rainfall follows arrowing.

D.4/43 ratoons strongly and it is intended to include this variety in more estate trials to determine the conditions best suited to it.

In trials reaped to date, this variety has shewn itself to be the equal to B.41227 in Autumn reapings but inferior to the standard in Spring reapings. It is tolerant to Leaf Scald disease.

D.54/43 (Co. 421 x D.166/34).

Trial Nos. : 84, 92, 96, 97, 100, 102, 103.

This variety like D.4/43, is an Autumn cane. In four experiments reaped as plants in the Autumn it has shewn itself to be better than B.41227 in yield of sugar per acre although inferior to the standard in Pol. % Cane and in juice quality. In five Spring reapings as plants however, the yield of sugar per acre is considerably inferior to that of B.41227. This appears to be due to a rapid fall in juice quality if heavy rain follows arrowing.

D.54/43 ratoons strongly and in two experiments as First Ratoons—Autumn reaping—it outyielded the standard significantly, while in two trials as second ratoons, (also Autumn reaping) it also outyielded the standard in both, once significantly.

D.54/43 is tolerant to Leaf Scald disease.

D.62/43 (Co. 421 x Co. 331).

Trial Nos. : 19, 51, 53, 54, 59, 66, 67, 68, 69. 95.

D.62/43 has been reaped as Plants in only one trial in 1954 but its testing as First and Second Ratoons continues.

3. Barbados and Demerara Seedlings of the 1944, 1945 and 1946 Series.

B.45137 (B.38272 x B.34104).

Trial Nos. : 1, 22, 55, 74, 79, 92, 99.

B.45137 has now been tested against B.41227 in seven trials as plants, six as first ratoons and three as second ratoons. In these trials it has shewn itself to be somewhat inferior to the standard as plants owing to its relatively low Pol. % Cane. As First Ratoons, B.45137 has outyielded the standard in five out of the six trials reaped and as Second Ratoons in two out of three trials. The increased yield in these ratoon trials are sufficiently great to more than compensate for the slightly lower yield as plants relative to B.41227. As ratoons, its Pol. % Cane is about equal to the standard.

B.45137 is tolerant to leaf scald disease. It however, exhibits leaf lesions scattered over the leaf blade. Two different fungi are consistently isolated from the lesions (one being a species of Curvalaria and the other a Phialophora). Tests are being undertaken by the Plant Pathologist to determine whether these fungi are pathogenic.

Further testing of this variety will be continued in view of its strong ratooning ability and its apparent suitability to all soil types.

D.37/45 (B.34104 x Co. 331).

Trial Nos. : 14, 16, 18, 20, 92, 96, 99, 102.

This variety has now been reaped against B.41227 in eleven trials as Plants, and in seven as First and Second Ratoons. About equal to the standard in yield of sugar per acre as Plants, it has consistently outyielded the standard as First and Second Ratoons on clays. Its Pol. % Cane and Juice Purity are better than the standard.

D.37/45 has not been sufficiently tested on pegassy soils for its suitability to this soil type to be given but trials scheduled for reaping as plants in 1955 will allow of this being determined.

As D.37/45 is a heavy arrowing variety, it should be planted for Autumn reaping. It is moderately susceptible to chlorotic streak disease.

D.27/45, which has shewn promise at Sophia is to be tested on the sugar estates under a wider range of soil conditions.

B.46351 (B.35206 x P.O.J. 2878).

Trial Nos. : 10, 17, 21, 55, 70, 73, 94, 95, 101.

B.46351 has given yields somewhat below B.41227 under conditions of moderate rainfall, but is inferior to the standard with heavy rainfall. A strong ratooner, B.46351 will be further tested.

B.46378 (B.35247 x B.3337).

Trial Nos. : 1, 11, 14, 16, 17, 20, 21, 22, 51, 55, 74, 75, 79, 95, 101.

This variety is considered to have been fully tested and no further trials with it are contemplated. Its main characteristics and possibilities have been given previously in Bulletin No. 22, page 34.

D.39/46, D.49/46, D.133/46, D.141/46 and D.184/46 which have given good yields at Sophia are to be further tested in trials on the sugar estates.

4. Barbados Seedlings of the 1947 and 1948 Series.

B.S. 4744 (Co. 421 x B.4098).

Trial Nos. : 69, 71, 72, 77, 78, 92, 95.

This variety has been reaped in eight trials as Plants and six as First Ratoons. Yields of Cane per acre are generally high but the Pol. % Cane and Purity of the juice are very poor. As a result, yield of sugar per acre is inferior to that of B.41227.

B.S. 4744 is rated as susceptible/tolerant to Leaf Scald disease.

B.47225 (B.37161 x P.O.J. 2878).

Trial Nos. : 58, 85, 94, 96, 99, 100, 102, 103.

B.47225 shews promise of being a commercial variety, more particularly on intermediate pegasse and pegassy clays.

This variety has been reaped on nine occasions as Plants and twice as First Ratoons. As Plants it has outyielded B.41227 on three occasions, two of these being on pegassy clays and on each of these occasions by statistically significant

margins. On the other hand, B.41227 has outyielded this variety on six occasions, (all except one being on clays), five of these occasions being by statistically significant amounts. In the two reapings as First Ratoons, B.41227 outyielded B.47225 on the one on Frontland Clay but the standard was outyielded on that on Pegassy Clay. The margin in neither case was statistically significant.

To sum up therefore, the evidence to date suggests that as Plants B.47225 is likely to be superior to B.41227 in yield of sugar per acre on Pegassy clays but inferior to it on the other soil types. An insufficient number of trials have been reaped as ratoons to comment on the ratooning ability of this variety, relative to B.41227.

In general, B.47225 appears to be equal to B.41227 in Pol. % Cane and in Juice Purity. It is rated as being resistant to Leaf Scald disease.

B.47258 (B.39254 x B.34104).

Trial Nos. : 1, 76, 79, 92, 99.

This variety is a very promising one for clays. In six reapings as Plants, B.47258 has outyielded B.41227 in four. In four reapings as First Ratoons, the standard has been outyielded three times, and in two reapings as Second Ratoons B.41227 has been outyielded once. In experiments reaped to date therefore, B.47258 is in general somewhat superior to B.41227. With one exception, these trials have been on clays.

B.47258, possesses a higher Pol. % Cane and Juice Purity than B.41227 and shews promise of being a satisfactory ratooning variety. Estates are advised to build up nurseries of this variety for extension if its early promise is maintained in future reapings as ratoons.

B.47258 is rated as being tolerant to Leaf Scald disease.

B.S.4711, B.47162, B.47379 and B.47399 are being further tested against B.41227

B.48372 (Co. 421 x B.4098).

Trial Nos. : 51, 52, 68, 94, 98.

This is the only seedling of the Barbados 1948 series which is still under test. The yields as First Ratoons reaped in 1954 were however, relatively poor.

5. Barbados Seedlings of the 1949 and 1950 Series.

On the basis of the two Sorting Trials, the most promising seedlings of the Barbados 1949 Series appear to be B.4942, B.4995, B.49186, B.49257, B.49353 and B.49354. Of these, B.49186 and B.49353 are very susceptible to leaf scald disease. The seedlings of this series are being further tested in large scale field trials.

B.49388 which multiplied very rapidly in the nursery and which was placed in three large scale trials, has now been reaped on five occasions as plants. While tonnage of cane per acre was generally high, the Pol. % Cane and Juice Purity were extremely poor and its vigorous and rapid growth has not produced a commensurate yield of sugar. Its commercial possibilities under the high rainfall conditions of this colony are not therefore by any means as promising as its vigorous growth would lead one to expect.

The seedlings of the Barbados 1950 series have been planted out in two Sorting Trials. In addition, B.50133, B.50267, B.50268 and B.50377 have been planted in two normal field trials and B.5037, B.5047, B.50155, B.50210, B.50275, B.50311, B.50352 and B.50370 are each in one normal field trial. Comment on these varieties must be reserved until they have been reaped as plants.

6. Other Varieties.

During 1953 and 1954, the backlog of untested or partially tested Barbados and Demerara seedlings in nurseries at Sophia has been reduced to more manageable proportions and several hundreds of these have been discarded on the basis of observation and tests at Sophia. The promising remainder are being tested further at Sophia and on the estates as indicated in the preceding discussion of varieties.

The reduction in the number of Barbados and Demerara seedlings for testing now allows of attention being given to testing some of the more outstanding varieties from other countries. In this connection, the following varieties are in experiments scheduled for reaping in 1955 :—

M.134/32, M.213/40, M.423/41, P.O.J. 2967, P.O.J. 3016 and Pindar.

F. GENERAL SUMMARY AND RECOMMENDATIONS.

The marked differences in yield of sugar relative to the standard (B.41227) of certain arrowing varieties when reaped in the Spring as compared with Autumn reaping, (notably in the case of the varieties D.54/43, D.37/45 and D.158/41), clearly demonstrates the importance of knowing something of the growth and ripening characteristics of the various varieties. This is also necessary in order to distinguish between varieties that are early and late maturing. It has been the practice for variety trials to be reaped at the ages convenient to the estates managements and in accordance with normal reaping practices. It follows therefore, that varieties that mature appreciably earlier or later than these normal reaping ages do not shew to their best advantage. An attempt is being made to classify the more outstanding varieties in these respects.

It should also be pointed out that the past three years have been years of exceptionally heavy rainfall and have therefore favoured canes that suit (or at least that are more tolerant to) such conditions. In this connection, it is likely that these conditions have tended to enhance the yields of B.4098 relative to B.41227.

The behaviour of B.37161 is more anomalous. This cane undoubtedly does better than B.41227 under less heavy rainfall and also under conditions of very heavy rainfall but not with moderately heavy rainfall.

The explanation appears to be that B.41227 is equal to B.37161 under conditions of heavy rainfall *provided drainage conditions are satisfactory.* It is however, less tolerant to water-logging than is B.37161 and where as a result of heavy rainfall this condition exists, it will not yield as heavily. The fact that B.41227 under the heavy rainfall conditions of 1954 did better than usual on the more porous pegassy clays and less so on the heavy clays to which it is normally well suited, provides evidence of this. However, it should also be noted that in 1954 in many cases, fields of B.41227 were reaped at nine to ten months age. Since this variety is not an early maturing one, the yield per acre would in such circumstances have suffered materially.

In the past, the performance of the various varieties under test has been presented on the basis of mean yields in tons Pol. per acre for the various cycles and this data will continue to be given (See Table VI). However, for assessing the commercial value of the various varieties it is preferable to do so on the basis of yields of Available Pol. per acre relative to some standard. In this method, (which has been in use for some time), the present standard variety is B.41227, the yield of which in tons Available Pol. per acre in each trial is rated as 100 while those of the other varieties are expressed as indices representing their yields relative to B.41227. The performance of the more promising and outstanding varieties under test are presented in this manner in Table VII, which also shews the Pol. % Cane ratings similarly against B.41227.

TABLE VI.—**Actual Mean Yields in Tons Pol. per Acre from all Experiments.**

Variety.	Plants.		First Ratoons.		Second Ratoons.		Mean Total Cycle Yield.
	Yield.	Experiments.	Yield.	Experiments.	Yield.	Experiments.	
		Three Crops—Plants, First and Second Ratoons.					
D. 62/43	7.85	29	6.52	27	5.81	15	20.18
D. 58/43	7.57	14	6.39	8	5.88	8	19.84
B. 43214	7.63	6	6.10	5	6.00	6	19.73
D. 158/41	7.76	22	6.25	16	5.67	12	19.68
D. 37/45	7.44	14	6.35	10	5.77	11	19.56
D. 54/43	7.25	17	6.04	10	6.25	10	19.54
D. 142/41	7.52	22	6.36	20	5.15	16	19.03
B. 4362	7.33	14	5.85	12	5.74	10	18.92
B. 43413	7.62	14	5.66	13	5.45	12	18.73
B. 4214	7.23	7	5.29	5	5.70	5	18.22
D. 27/45	6.91	6	5.67	4	5.63	3	18.21
B. 45137	6.37	9	6.19	7	5.53	3	18.09
B. 40105	7.21	18	5.79	15	4.90	15	17.90
D. 4/43	6.89	14	5.75	8	5.22	8	17.86
B. 47258	6.78	7	6.05	5	4.82	2	17.65
B. 4098	7.06	25	5.66	22	4.86	14	17.56
***B. 41227**	**6.91**	**94**	**5.53**	**71**	**5.07**	**42**	**17.51**
B. 37161	6.66	41	5.56	36	4.83	12	17.05
B. 4373	6.75	12	5.35	11	4.86	10	16.96
B. 34104	6.69	118	5.33	111	4.94	92	16.96
B. 43253	5.92	11	5.24	8	5.36	9	16.52
B. 46378	6.45	19	4.98	17	4.92	11	16.35
B. 45151	6.67	7	4.67	5	5.01	3	16.35
B. 46351	6.23	11	5.05	7	4.92	5	16.20
B.S. 4747	5.95	9	4.52	9	3.61	3	14.08
		Two Crops—Plants and First Ratoons.					
D. 49/46	7.08	5	6.55	2	—	—	13.63
***B. 41227**	**6.91**	**94**	**5.53**	**71**	—	—	**12.44**
B. 47225	6.40	9	5.18	2	—	—	11.58
B.S. 4744	5.93	8	5.13	6	—	—	11.06
B. 48372	6.10	6	4.80	4	—	—	10.90

***Standard Cane.**

TABLE VII.—The more Outstanding Varieties Compared with B.41227.

Variety.	No. of Comparisons			Available Pol. Per Acre Index. (B. 41227=100).			Tons Available Pol. per Acre. (B. 41227=100).			Pol. % Cane Index. (B. 41227=100).
	P.	1 R.	2 R.	P.	1 R.	2 R.	P.	1 R.	2 R.	
D. 37/45	11	7	7	100	107	114	6.40	5.48	5.36	102
D. 62/43	16	15	7	108	108	101	6.91	5.53	4.75	102
B. 45137	8	6	3	94	112	114	6.02	5.73	5.36	98
B. 43413	8	8	8	102	94	104	6.53	4.81	4.89	100
B. 41227	—	—	—	100	100	100	6.40	5.12	4.70	100
D. 4/43	10	4	5	96	95	101	6.14	4.86	4.75	100
B. 37161	28	25	7	92	98	94	5.89	5.02	4.42	99
B. 4362	6	4	2	95	93	91	6.08	4.76	4.28	107
B. 46378	17	16	11	93	90	98	5.95	4.61	4.61	98
B. 46351	11	8	5	90	93	98	5.76	4.76	4.61	98
B. 4373	9	9	8	94	90	90	6.02	4.61	4.23	100
B. 4098	13	11	6	93	94	86	5.95	4.81	4.04	103
B. 34104	21	19	14	84	81	84	5.38	4.15	3.95	99
The following varieties also show promise but have been insufficiently tested against B.41227:										
B. 47258	6	4	2	106	113	97	6.78	5.79	4.56	105
D. 158/41	9	4	2	100	102	106	6.40	5.22	4.98	99
B. 47225	9	2	—	94	94	—	6.02	4.81	—	99
B. 43253	3	3	3	97	90	87	6.21	4.61	4.09	109
B.S. 4744	8	6	—	84	92	—	5.38	4.71	—	97

On the basis of results obtained from the trials and from observations of the estates cultivations, the following recommendations are made.

Cane Variety.	SOIL TYPE.			
	Berbice Frontland Clay.	*Demerara Frontland Clay.*	*Riverside Clays.*	*Pegasse.*
B.41227	50	50	45	30
B.37161	35	35	30	60
B.4098	5	5	10	—
D.37/45	5	5	5	—
B.4362	—	—	5	5
B.4373, B.46378, B.43413, B.45137	5	5	5	5

The figures given refer to the percentage of the area in the particular soil type recommended to be planted in the respective varieties.

B.43253 is worthy of consideration in the special conditions to which reference has already been made. In addition, the very promising varieties B.47258 and B.47225 should be maintained in reasonably large nurseries on estates since their extension will be recommended if they prove to be reliable ratooning varieties.

These recommendations may be modified in accordance with the results from trials to be reaped in the future. Where conditions on certain estates appear to favour a particular variety more than another the management will necessarily be guided by local experience.

CULTIVATION EXPERIMENTS.

The Cameron-Williams system of cultivation described in Sugar Bulletin, No. 11, (pages 54—57) has been the standard system of cultivation at Sophia Sugar Experiment Station for many years and much of the improvement in yields at the Station is attributable to it. However, the system has not been tested under comparable conditions with other systems of cultivation and this is desirable. Accordingly, it was decided to select a field (So. 3 E) in which this system of cultivation had never been used and to lay down in it an experiment to compare the Cameron-Williams system with the standard estate system of hand cultivation. Plant cane and First ratoon yields are presented in Table I below. It should be noted that a variety trial was super-imposed on the cultivation trial and that differences in the system of cultivation can have differential yield effects as between different cane varieties.

TABLE I.

Cane Variety.	Standard Estate System. Tons 96° Sugar per Acre.			Cameron—Williams System. Tons 96° Sugar per Acre.		
	Plants. 6.9.53.	1 R. 10.9.54.	Total Yield 2 reapings.	Plants. 6.9.53.	1 R. 10.9.54.	Total Yield 2 reapings.
D.62/43	6.71	5.23	11.94	7.38	6.77	14.15
B.41227	6.25	5.36	11.61	6.02	4.69	10.71
D.158/41	6.22	5.31	11.53	7.22	5.39	12.61
B.4098	5.13	5.58	10.71	7.13	5.51	12.64
B.37161	5.53	4.93	10.46	6.72	5.15	11.87
D.142/41	4.68	4.53	9.21	6.98	5.04	12.02
B.34104	4.73	3.40	8.13	5.67	4.56	10.23
Means	5.61	4.91	10.52	6.73	5.30	12.03

The yields of sugar per acre to date are higher with the Cameron-Williams system of cultivation. On the other hand, the quality of the cane is poorer. This is demonstrated in Table II.

TABLE II.

Cane Variety.	Standard Estate System.				Cameron-Williams System.			
	Juice Purity.		Tons Cane per Ton 96° Sugar.		Juice Purity.		Tons Cane per Ton 96° Sugar.	
	P.	1 R.	P.	1 R.	P.	1 R.	P.	1 R.
D.62/43	85.1	87.5	8.59	7.99	84.4	87.2	9.11	7.91
B.41227	85.0	84.6	9.13	8.84	82.1	84.7	10.16	9.51
D.158/41	85.2	86.7	9.03	8.34	80.5	86.0	10.43	9.50
B.4098	85.1	88.3	9.31	8.06	83.3	87.4	9.53	8.14
B.37161	87.0	89.6	8.70	8.21	83.2	85.5	9.94	9.22
D.142/41	84.5	86.6	9.06	8.52	83.9	85.9	9.19	8.04
B.34104	80.3	86.8	11.53	9.18	83.5	85.2	9.66	9.47
Means	84.6	87.2	9.34	8.45	83.0	86.0	9.72	8.83

It should be stressed that the full benefits from the Cameron-Williams system of cultivation, which aims at improving soil tilth as well as drainage conditions, are not realisable in their entirety during the first cycle. It is intended therefore to continue this experiment over a number of years.

FERTILIZER EXPERIMENTS, 1954.

BY

L. S. BIRKETT, C. CAMERON and H. PAUL *.

A review of the investigations conducted locally in connection with the nutrient requirements of the sugar cane, indicated that plant analysis methods appeared to offer a suitable line of approach to the problem of determining fertilizer requirements [1], [2]. Accordingly, the fertilizer experiments reaped in 1954 were designed to follow up previous work in this connection. They consisted of nine experiments laid down on unlimed soils of the various soil types and tested the response by the sugar cane to nitrogen, phosphate and potash.

The previous investigations referred to above, have established the rates of application of these nutrients that are optimum (or near optimum) where responses are obtained, and these average optimum levels were the ones adopted in the experiments.

The experiments were equally distributed between plants, first, and second ratoons. In order to avoid the complications which varietal differences might introduce, except in one case, B. 41227 was used as the indicator variety.

Samples of leaves of third rank were taken from the individual plots of each experiment and from these, composite samples of the leaf blades were taken for the determination of their contents of nitrogen, phosphate and potash. The ages of the cane at which leaf samples were taken, were 16 to 18 weeks for plant canes and 10 to 12 weeks for ratoons. In addition, the phosphate content of the juices at time of reaping was also determined since previous work [1], [3] had indicated that this determination appeared to afford a satisfactory means of assessing the phosphate status of the soil and of the canes grown thereon.

FERTILIZER TREATMENTS.

The fertilizer treatments were as follows :—

1. Control. .. No fertilizers applied.

2. N_3 .. .. Three hundredweight of sulphate of ammonia per acre = 70.5 lbs. Nitrogen per acre.

3. N_6 .. .. Six hundredweight of sulphate of ammonia per acre = 141.0 lbs. Nitrogen per acre.

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4. N_6P_6 .. .. Six hundredweight of sulphate of ammonia per acre plus six hundredweight of single calcium superphosphate per acre = 141.0 lbs. Nitrogen and 125 lbs. P_2O_5 per acre.

5. N_6K_4 .. .. Six hundredweight of sulphate of ammonia per acre plus four hundredweight of sulphate of potash per acre = 141.0 lbs Nitrogen and 215 lbs K_2O per acre.

6. $N_6P_6K_4$ .. Six hundredweight of sulphate of ammonia, six hundredweight of single calcium superphosphate and four hundredweight of sulphate of potash per acre = 141.0 lbs. Nitrogen, 125 lbs. P_2O_5 and 215 lbs. K_2O per acre.

Fertilizers were applied to plant canes at three to four weeks after planting and to ratoons between two and three weeks after reaping.

In all cases the fertilizers were applied to the surface of the soil along the cane row.

DESIGN OF EXPERIMENTS.

Except in the case of fields So. 7 W. and So. 17 W. in which randomised plots were used, the experiments were Latin squares.

YIELD DATA

The yield of 96° sugar per acre for the various treatments in the nine experiments are presented in Table I.

DISCUSSION OF RESULTS.

Sophia, 17 W. Plant Cane, B. 41227. Soil Type : Blairmont Loam.

Applications of nitrogen resulted in higher yields of sugar with increasing rates of application of nitrogen. The gain obtained by increasing from the N_3 to the N_6 level (an increase of 11.4% in yield) is just short of being statistically significant. It however represents a considerable economic gain in sugar after deducting the cost of the additional fertilizer and clearly demonstrates that the standard rate of application of 2 cwt. of sulphate of ammonia per acre is well below the economic optimum rate in this case.

The application of phosphate results in a statistically significant response in yield of sugar. While a small increase in yield is also obtained by applying potash, it is not significant.

TABLE I.

FERTILIZER EXPERIMENTS REAPED IN 1954 — YIELDS, TONS 96° SUGAR PER ACRE.

Experiment.	Soil Type.	Cane Variety.	Cycle.	TONS 96° SUGAR PER ACRE.						
				Control.	N_3.	N_6.	$N_6 P_6$.	$N_6 K_4$.	$N_6 P_6 K_4$.	Signif. Diff.
Sophia — 17 W.	Blairmont Loam.	B. 41227	Plants	4.14	5.25	5.85	7.36	6.45	7.35	1.06
Sophia — 7 W.	Blairmont Clay.	„	„	4.21	4.78	4.68	4.94	4.63	5.44	1.07
Wales — 51 V.B.	Intermediate Pegassy Clay.	„	„	5.19	5.25	5.66	6.35	6.32	6.93	.83
Blairmont— 28 B.K.	Blairmont Clay.	„	1st R.	3.31	4.80	4.91	4.63	5.02	5.25	.62
Blairmont— 52 B.L.	Blairmont Clay.	„	„	3.72	5.40	5.67	5.99	6.35	6.26	.74
Diamond — 37 G.G.	Pegassy Clay.	„	„	4.47	5.38	5.98	5.36	6.12	5.19	.83
Blairmont— 18 M.	Frontland Clay.	„	2nd R.	2.44	2.43	2.26	3.06	2.57	3.32	.56
Blairmont— 28 R.P.	Frontland Clay.	„	„	3.05	3.83	3.97	3.77	4.14	3.89	.62
Blairmont— 28 R.P.	Frontland Clay.	B. 37161	„	4.04	4.78	4.69	5.71	4.87	5.47	.59

Sophia, 7 W. Plant Cane, B. 41227. Soil Type: Blairmont Clay.

The increase in yield of sugar from applications of nitrogen attained the maximum at the N_3 level. This increase (13.5%) was not statistically significant however, owing to the relatively high variation in the plot yields from the same treatment. Applications of phosphate and potash gave no significant increases in yield of sugar either singly or in conjunction. There appears to be an interaction effect between Phosphate and Potash in the presence of Nitrogen in the $N_6P_6K_4$ treatment which however did not attain statistical significance.

Wales, 51 V.B. Plant Cane, B. 41227. Soil Type: Intermediate Pegassy Clay.

There was an increase in yield of sugar from the application of nitrogen which however, was not sufficiently high to be statistically significant. The application of 125 lbs. P_2O_5 per acre along with 141 lbs. of Nitrogen in the N_6 P_6 treatment increased the yield of sugar over the N_6 level of nitrogen by 12.2% which just fell short of being significant. A similar gain (also just short of significance) resulted from the application of 215 lbs. of K_2O per acre in the N_6K_4 treatment. However, when both phosphate and potash are used together in conjunction with nitrogen ($N_6P_6K_4$ treatment) the yield of sugar per acre is 22.4% greater than that at the N_6 level, an increase which is highly significant.

Blairmont, 28 B.K. First Ratoons, B. 41227. Soil Type: Blairmont Clay.

A significant response is obtained only from nitrogen, the N_3 level being optimum, giving a 45% increase in yield over the control.

There is a tendency for phosphate to depress the yield when applied in conjunction with nitrogen at the N_6 level. When applied along with potash in the $N_6P_6K_4$ treatment there is an increase in yield which is not statistically significant however.

Blairmont, 52 B.L. First Ratoons, B.41227. Soil Type: Blairmont Clay.

Increasing rates of application of nitrogen resulted in increased yields of sugar per acre. The gain in yield obtained by increasing the rate of application from the N_3 to the N_6 level is not statistically significant and even if real would not prove to be economic.

There is a small increase in yield from potash which however, is not significant.

Diamond, 37 G.G. First Ratoons, B.41227. Soil Type: Pegassy Clay.

In this experiment, a statistically significant increase in yield of sugar is obtained only from applications of nitrogen, the optimum rate being the N_3 level. There is a tendency for applications of phosphate to decrease the yield of sugar owing probably to an unbalance in available nutrients. This unbalance appears to be still more marked when in addition potash is added in the N_6P_6 K_4 treatment.

Blairmont, 18 M. Second Ratoons, B.41227. Soil Type: Frontland Clay.

Applications of nitrogen resulted in a decrease in the yield of sugar per acre. This result is attributed to the effect of sulphate of ammonia in depressing the uptake of phosphate from a soil already very low in available phosphate. There is a marked response to applications of phosphates, the yield of sugar from the N_6P_6 treatments being 35.4% higher than that of the N_6 treatment. There is also an increase in yield from the application of potash which however, did not attain significance.

Heavy applications of phosphate are recommended for this and adjoining fields of this area.

Blairmont, 28 R.P. Second Ratoons, B.41227. Soil Type: Frontland Clay.

The optimum rate of application of Nitrogen is the N_3 level, the increase at the N_6 over the N_3 being insignificant. Neither phosphate nor potash gave any increase in yield of sugar. The soil of this field is however, deficient in available phosphate as measured both by the Truog method and by the phosphate content of juices of cane grown thereon. Failure of the cane to respond to applications of phosphates is attributed to the fact that either soil or climatic conditions did not allow of sufficient absorption of the phosphate from the phosphatic fertiliser applied. See Tables II and III.

Blairmont, 28 R.P. Second Ratoons, B.37161. Soil Type: Frontland Clay.

As with B.41227, the optimum rate of application of nitrogen is the N_3 level. In this experiment however, there is a statistically significant response to the application of phosphate. This result appears to be due to the fact that there was sufficient absorption of phosphate from the fertilizer in this case to be of benefit to the plant.

Leaf Analyses. For the sampling ages adopted, the levels of the major plant nutrients which appear necessary for optimum yields (expressed as percentages of the dry matter of the leaf blades), have been tentatively suggested[3] as being:—

Nitrogen.	2.25% N. or over provided that the percent N. does not fall below 1.90% in plants, nor below 1.70% in ratoons at 18 to 20 weeks age.
Phosphate.	0.45 to 0.50% P_2O_5.
Potash.	1.40% K_2O or over.

There are indications however, that the critical levels for Nitrogen and Phosphate are dependent upon climatic conditions and therefore cannot be stated with exactness to cover all conditions[3].

TABLE II.

FERTILIZER EXPERIMENTS REAPED IN 1954 — LEAF ANALYSIS DATA.

Experiment.	Soil Type.	Cane Variety	Cycle.	NITROGEN % LEAF DRY MATTER.						LEAF DRY MATTER. P_2O_5 %			LEAF DRY MATTER. K_2O %					
				Control.	N_3.	N_6.	N_6P_6.	N_6K_4.	$N_6P_6K_4$.	Control.	N_6.	N_6P_6.	Control.	N_3.	N_6.	N_6P_6.	N_6K_4.	$N_6P_6K_4$.
Sophia — 17 W.	Blairmont Loam.	B. 41227	Plants.	1.49	2.24	2.49	2.53	2.48	2.47	.62	.59	.69	1.76	1.86	1.81	2.07	2.07	2.14
Sophia — 7 W.	Blairmont Clay.	„	„	2.01	2.26	2.29	2.26	1.98	2.24	.57	.56	.54	—	1.76	1.86	1.90	1.66	1.76
Wales — 51 V.B.	Intermediate Pegassy Clay.	„	„	2.09	2.16	2.37	2.32	2.31	1.93	.62	.51	.63	1.30	1.16	1.16	1.06	1.57	1.57
Blairmont— 28 B.K.	Blairmont Clay.	„	1st R.	1.52	2.08	2.25	2.30	2.22	2.26	.45	.46	.61	1.33	1.42	1.37	1.52	1.69	1.86
Blairmont— 52 B.L.	Blairmont Clay.	„	„	1.68	2.27	2.52	2.50	2.48	1.94	.64	.58	.60	1.57	1.42	1.45	1.78	1.76	1.98
Diamond — 37 G.G.	Pegassy Clay.	„	„	1.43	2.46	2.59	2.13	2.49	1.80	.73	.89	.93	1.52	1.49	1.45	1.42	1.90	1.90
Blairmont— 18 M.	Frontland Clay.	„	2nd R.	1.58	1.78	1.94	1.99	1.97	1.96	.34	.32	.45	1.30	1.45	1.45	1.61	1.61	1.93
Blairmont— 28 R.P.	Frontland Clay.	„	„	1.23	1.73	1.75	1.86	1.61	1.87	.37	.34	.34	1.33	1.35	1.30	1.64	1.49	1.71
Blairmont— 28 R.P.	Frontland Clay.	B. 37161	„	1.14	2.03	1.87	2.29	2.15	2.12	.37	.37	.43	1.42	1.33	1.42	1.52	1.54	1.69

TABLE III.

FERTILIZER EXPERIMENTS REAPED IN 1954—JUICE ANALYSIS DATA.

Experiment.	Soil Type.	Cane Variety.	Cycle.	P205 % JUICE.					
				Control.	N_3.	N_6.	$N_6 P_6$.	$N_6 K_4$.	$N_6 P_6 K_4$.
Sophia — 17 W	Blairmont Loam.	B. 41227	Plants.	.048	.026	.015	.025	.015	.024
Sophia — 7 W.	Blairmont Clay.	„	„	.047	.046	.045	.049	.044	.051
Wales — 51 V.B.	Intermediate Pegassy Clay.	„	„	.021	.014	.013	.018	.013	.018
Blairmont— 28 B.K.	Blairmont Clay.	„	1st R.	.036	.020	.019	.024	.021	.025
Blairmont— 52 B.L.	Blairmont Clay.	„	„	.047	.024	.018	.027	.021	.026
Diamond — 37 G.G.	Pegassy Clay.	„	„	.071	.056	.025	.036	.032	.039
Blairmont— 18 M.	Frontland Clay.	„	2nd R.	.008	.006	.004	.008	.005	.009
Blairmont— 28 R.P.	Frontland Clay.	—	„	.009	.007	.006	.007	.005	.008
Blairmont— 28 R.P.	Frontland Clay.	B. 37161	„	.008	.007	.005	.009	.005	.009

It should also be noted that where deficiencies exist, yields may be increased very appreciably by comparatively small absorption of the deficient nutrient, illustrating the high efficiency with which these small quantities are utilised in such cases. This is well illustrated in the case of phosphate in the experiments in fields 18 M. and 28 R.P.

In conclusion, the authors would like to acknowledge the help given by Dr. H. Evans, in having the leaf potash analyses carried out at his laboratory and for a number of valuable comments that have assisted us in preparing the text.

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THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY. XX.

BY

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(1) *Commercial Yields, 1954.* The average yield in 1954, of tons sugar per acre from all varieties on sugar estates in British Guiana was 3.14 tons as compared with 3.47 tons per acre in 1953. The yields of the various varieties on the individual estates are presented in Table I which is drawn up on the usual regional basis.

The data in Table I are summarised for the major cane varieties in Table II.

TABLE II.—**Average Estates Yields for the Major Cane Varieties, 1954.**

Cane Variety.	Average Yield, Tons Sugar per Acre, 1954.					Crusher Juice.	
	Plants.	1 R.	2 R.	3 R	Old R.	Pol. %.	Purity.
B.37161	3.91	3.61	3.17	3.39	3.55	14.06	82.91
B.4362	3.80	3.56	3.41	3.27	—	14.15	82.44
B.4098	3.85	3.44	3.20	3.13	3.18	13.82	82.49
B.41227	3.65	3.39	3.16	3.06	2.40	14.04	82.44
D.37/45	3.41	3.79	3.01	—	—	13.30	80.67
D.142/41	4.16	3.83	2.87	2.78	1.34	14.08	82.67
Co. 419	4.24	3.45	3.60	1.62	2.83	13.73	82.28
B.34104	3.04	2.82	2.60	2.53	2.71	13.96	82.65
D.14/34	3.14	2.72	2.49	2.28	2.16	14.44	83.05
Colony Averages. (All Varieties).	3.73	3.35	2.92	2.69	2.84	14.06	82.60

(2) *Varietal Composition of the 1954 Harvests.*

The variety position for 1954 on an estate basis has been abstracted from returns supplied by the sugar estates and refer only to estate grown canes from which approximately 98% of the sugar production of the Colony is manufactured. These data are summarised in Table III. The acreage occupied by the varieties which constitute the "other canes" category is given in Table IV.

TABLE I (C).— Weighted Mean Commercial Yields along Demerara River Banks. 1954.

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar per Acre.*
		Plant Canes. 100 Acres and Over.		
Co. 419	172.1	13.89	82.93	4.55
B. 4098	406.8	13.81	81.88	4.27
B. 37161	1,110.3	13.78	82.61	4.14
B. 4362	496.1	14.15	82.81	3.98
B. 34104	113.7	14.24	82.86	3.84
B. 41227	1,664.2	13.57	81.40	3.78
		Under 100 Acres.		
B. 47225	.2	13.53	81.02	5.00
B. 46378	32.7	12.57	81.04	4.68
D. 158/41	28.6	13.08	82.29	4.32
D. 37/45	44.4	12.90	81.70	4.20
D. 142/41	46.4	13.80	82.07	4.16
B. 47258	2.0	11.57	79.25	4.05
		First Ratoons. 100 Acres and Over.		
D. 142/41	123.8	13.99	82.63	3.89
Co. 419	232.6	13.69	82.67	3.85
B. 34104	331.7	13.57	81.43	3.76
B. 37161	926.5	14.23	82.38	3.54
B. 41227	1,713.5	13.90	82.20	3.48
B. 4098	465.1	14.59	83.89	3.43
B. 4362	140.8	13.99	82.91	3.37
		Under 100 Acres.		
D. 49/41	35.5	13.58	81.63	4.09
D. 62/43	32.5	13.01	81.28	4.00
D. 158/41	44.8	13.43	82.70	3.88
D. 37/45	5.7	13.91	81.83	3.72
Mixed	10.0	15.17	85.70	3.40
Diamond 10	10.5	13.10	83.10	3.05
D. 14/34	39.4	13.78	82.18	2.53
B. 40105	.5	12.14	79.87	2.00
		Second Ratoons. 100 Acres and Over.		
Co. 419	280.5	14.08	81.83	3.59
B. 41227	1,705.2	14.16	82.08	3.27
B. 4098	303.3	14.13	83.24	3.25
B. 37161	756.7	14.28	82.93	3.19
B. 34104	727.8	14.03	81.76	2.80
		Under 100 Acres.		
B. 4362	67.0	15.47	84.65	4.04
D. 62/43	16.8	13.88	81.85	3.58
D. 142/41	59.3	13.84	82.28	3.09
D. 14/34	62.3	14.70	82.94	2.95
D. 49/41	3.0	15.33	83.85	2.87
D. 158/41	10.0	13.33	82.32	2.53
		Third Ratoons. 100 Acres and Over.		
B. 37161	836.3	13.98	83.57	3.55
B. 41227	542.5	14.27	83.07	3.27
D. 142/41	113.5	14.35	82.96	3.13
B. 34104	881.0	13.79	82.74	2.79
		Under 100 Acres.		
B. 4362	5.5	13.47	83.19	3.27
D. 49/41	11.5	14.23	82.96	2.96
B. 4098	25.3	14.72	83.58	2.81
D. 14/34	86.6	13.68	81.27	2.62
D. 158/41	7.2	13.65	81.88	2.51
D. 62/43	.5	15.16	84.22	2.00
Co. 419	20.0	11.73	77.22	1.62
		Old Ratoons. 100 Acres and Over.		
B. 37161	290.0	14.15	83.78	4.22
B. 34104	1,597.6	13.61	82.51	3.10
		Under 100 Acres.		
B. 41227	23.0	13.91	83.80	3.12
D. 14/34	91.3	13.35	81.86	2.58

*Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (D).—Weighted Mean Commercial Yields in Berbice, 1954.

Variety.	Acres Harvested.	Crusher Juice.		Tons 96° Sugar per Acre.*
		Pol. %	Purity.	
		Plant 100 Acres	*Canes. and over.*	
B. 37161	1,282.0	14.31	83.41	3.77
B. 41227	3,640.1	14.15	82.84	3.53
B. 4098	1,776.7	14.06	82.34	3.50
D. 158/41	106.9	14.06	82.94	3.26
Seedlings	149.9	13.55	82.52	3.22
D. 37/45	109.2	13.60	81.50	2.94
B. 34104	438.5	13.64	81.95	2.81
		Under 100	*Acres.*	
B. 46378	2.1	14.51	83.87	4.43
B. 40105	4.4	13.54	81.08	3.64
B. 4362	18.0	14.15	81.00	3.39
D. 62/43	93.9	14.36	83.57	3.20
D. 14/34	24.9	14.96	84.91	3.14
Mixed	14.7	13.57	82.53	2.72
		First 100 Acres	*Ratoons. and over.*	
B. 37161	1,292.6	13.70	82.78	3.46
B. 4098	1,279.7	13.97	82.29	3.37
B. 41227	2,358.5	14.03	82.57	3.16
Co. 419	151.2	13.02	78.91	3.05
D. 14/34	142.4	14.95	84.41	2.77
B. 34104	1,417.1	14.04	83.38	2.57
		Under 100	*Acres.*	
B. 4362	5.6	12.90	82.43	4.29
D. 37/45	26.1	14.20	81.01	3.80
B. 46378	.6	15.44	83.46	3.33
Mixed	21.4	13.45	81.58	2.66
D. 62/43	41.8	14.66	85.30	2.47
D. 158/41	60.1	14.68	83.93	2.40
		Second 100 Acres	*Ratoons. and over.*	
B. 37161	1,120.1	14.02	82.67	3.14
B. 4098	396.8	13.98	82.12	2.99
B. 41227	2,851.6	14.26	82.80	2.88
D. 142/41	149.0	13.80	82.11	2.68
D. 14/34	609.7	14.83	84.20	2.44
B. 34104	2,018.8	13.74	82.08	2.30
D. 158/41	120.7	13.91	83.51	1.73
		Under 100	*Acres.*	
Co. 419	3.3	10.94	80.44	3.33
Mixed	9.7	13.43	81.58	3.28
B. 4362	1.3	11.82	78.80	3.08
D. 37/45	1.0	11.82	78.80	3.00
D. 62/43	10.6	13.49	82.12	2.76
P.O.J. 2878	18.9	14.83	83.93	2.35
		Third 100 Acres	*Ratoons. and over.*	
B. 37161	227.4	14.05	82.75	3.23
B. 4098	179.8	13.87	81.77	3.18
D. 142/41	143.6	13.69	81.72	2.90
B. 41227	499.6	14.31	82.58	2.84
B. 34104	3,593.5	14.02	82.81	2.41
D. 14/34	430.8	15.06	84.88	2.15
		Under 100	*Acres.*	
B. 43253	1.2	12.61	80.83	3.83
D. 158/41	11.0	14.17	82.48	2.94
D. 49/41	9.3	15.30	83.80	2.82
B. 37172	3.0	15.70	84.80	2.80
Mixed	5.0	14.15	82.99	2.04
		Old 100 Acres	*Ratoons. and over.*	
Co. 419	164.6	14.97	83.70	3.05
B. 37161	181.4	13.44	81.02	2.86
B. 41227	130.5	13.89	81.55	2.39
B. 34104	1,960.7	14.03	82.32	2.35
D. 14/34	324.4	14.56	83.59	1.94
		Under 100	*Acres.*	
Mixed	15.5	15.07	84.14	3.24
D. 142/41	1.0	14.24	83.27	3.00
D. 200/36	10.0	14.34	83.42	2.88
D. 158/41	.7	14.69	85.40	2.71
Co. 421	64.2	15.24	84.51	2.12

* Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (E).— Weighted Mean Commercial Yields under Estate Conditions, 1954.

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar Per Acre.*
		Plant 100 Acres	*Canes. and over.*	
Co. 419	222.6	13.77	82.56	4.24
B. 37161	4,015.4	13.95	82.85	3.91
B. 4098	3,085.4	13.83	82.23	3.85
B. 4362	1,226.3	14.33	82.57	3.80
B. 41227	7,845.1	13.84	82.21	3.65
D. 158/41	135.5	13.67	82.68	3.49
D. 37/45	189.7	12.99	80.59	3.41
Mixed	213.0	13.61	82.56	3.37
B. 34104	679.3	13.82	82.15	3.04
		Under 100	*Acres.*	
B. 47379	3.0	14.35	84.16	6.13
B. 46369	3.2	13.78	81.05	5.20
B. 4788	3.5	17.52	89.39	4.71
B. 46151	3.7	15.18	84.11	4.61
B. 46378	41.0	13.57	82.53	4.38
D. 142/41	46.4	13.80	82.07	4.16
B. 47258	2.0	11.57	79.25	4.05
B. 47262	3.2	15.52	84.49	3.97
B. 4764	4.7	15.44	85.36	3.92
B. 43253	4.5	14.03	81.10	3.56
B. 49380	3.5	13.21	76.69	3.54
B. 4765	4.5	16.28	85.24	3.51
B. 40105	22.4	13.62	80.88	3.46
D. 62/43	93.9	14.36	83.57	3.20
B. 4448	9.5	12.59	80.29	3.20
D. 14/34	24.9	14.96	84.91	3.14
B. 47419	1.0	13.27	80.93	3.00
B. 4744	2.0	13.27	80.93	2.70
B. 47225	50.9	14.14	82.82	2.64
B. 44341	15.3	11.39	76.34	2.53
B. 43413	20.0	11.70	77.74	2.24
		First 100 Acres	*Ratoons. and over.*	
D. 142/41	127.8	14.24	83.14	3.83
B. 37161	4,631.9	13.96	82.80	3.61
B. 4362	205.3	14.12	82.43	3.56
Co. 419	444.8	15.06	81.62	3.45
B. 4098	2,271.5	14.02	82.56	3.44
B. 41227	6,208.7	13.99	82.40	3.39
D. 62/43	143.2	13.92	83.14	3.38
B. 40105	489.7	13.27	81.30	3.38
Mixed	113.1	14.18	82.78	2.98
D. 158/41	130.9	13.95	83.03	2.94
B. 34104	3,106.8	13.92	82.80	2.82
D. 14/34	181.8	14.37	83.30	2.72
		Under 100	*Acres.*	
D. 49/41	35.5	13.58	81.63	4.09
D. 37/45	31.8	14.15	81.15	3.79
B. 46378	4.8	14.70	82.78	3.40
B. 43253	10.7	14.56	83.78	3.34
Diamond 10	10.5	13.30	83.10	3.05
B. 44341	9.7	11.41	78.10	3.03
B. 47225	32.1	14.52	83.39	2.87
		Second 100 Acres	*Ratoons. and over.*	
Co. 419	293.0	13.31	81.90	3.60
B. 4098	811.8	14.34	83.01	3.20
B. 37161	3,474.8	14.20	82.98	3.17
B. 41227	5,974.0	14.31	82.87	3.06
B. 40105	489.2	13.57	81.28	3.00
D. 142/41	238.4	14.02	82.58	2.87
B. 34104	5,349.8	13.91	82.27	2.60
D. 14/34	682.5	14.51	83.07	2.49
D. 158/41	149.4	13.71	82.92	1.99

TABLE III.—**Percentage Distribution of the Varieties Reaped in 1954.**

Variety.	English Acres.	Percentage Distribution.				
		In West Demerara.	Along Demerara River Banks.	In East Demerara.	Berbice.	Colony.
B.34104	23,137.8	11.0	15.8	32.5	40.7	31.1
B.41227	21,588.2	13.7	26.2	16.2	43.9	29.1
B.37161	14,157.2	24.1	27.7	19.2	29.0	19.1
B.4098	6,461.8	16.5	18.6	7.8	57.1	8.7
D.14/34	1,985.2	5.1	14.1	3.6	77.2	2.7
B.4362	1,513.0	30.7	46.9	20.8	1.6	2.0
B.40105	1,373.7	.5	—	99.2	.3	1.8
Co. 419	1,145.5	6.2	61.6	9.6	22.6	1.5
D.142/41	939.5	23.6	36.5	8.6	31.3	1.3
D.158/41	461.9	—	19.6	15.6	64.8	.6
D.62/43	308.7	28.4	16.1	8.1	47.4	.4
D.37/45	222.5	11.3	22.5	4.9	61.3	.3
Other Varieties	1,003.9	29.2	11.4	26.1	33.3	1.4
Totals	74,298.9					100.0

TABLE IV.—**Acreages of the Varieties Constituting the "Other Canes" Category.**

Variety.	English Acres.		Variety.	English Acres.		Variety.	English Acres.	
	1954.	1955.		1954.	1955.		1954.	1955.
P.O.J. 2878	79	26	B.40102	101	52	B.46369	—	3
P.O.J. 2967	—	2	B.4373	—	32	B.4724	—	2
P.O.J. 3016	—	1	B.43253	17	24	B.4733	—	1
Pindar	—	41	B.43413	21	23	B.4744	—	18
Co. 421	82	15	B.4448	—	3	B.4764	—	5
Comus	—	15	B.4466	—	4	B.4765	—	5
Diamond 10	17	11	B.44111	—	2	B.4788	—	4
Eros	—	2	B.44244	—	2	B.47258	—	40
D.49/41	101	31	B.44341	18	18	B.47262	—	3
D.18/46	—	2	B.46151	—	4	B.47379	—	14
D.19/46	—	2	Mixed			B.47419	—	3
B.37172	—	3	Varieties	53	275	B.49380	—	4

(3) *Acreages in the Various Varieties Scheduled for Reaping in 1955.*

The acreage in the various varieties which are scheduled for reaping in 1955 are given in Table V. It will be noted that the acreage in the leaf scald susceptible varieties B.34104, D.14/34 and Co. 419 have dropped very considerably, while the varieties B.37161, B.41227, B.4098 and B.4362 have increased as percentages of the crop.

TABLE V.—**Percentage Distribution of the Varieties to be Reaped in 1955.**

Variety.	Total English Acres in the Respective Cane Varieties.	Percentage Distribution.				
		In West Demerara.	Along Demerara River Banks.	In East Demerara.	In Berbice.	Colony.
B. 41227	26,080.59	10.9	22.6	19.0	47.5	33.6
B. 37161	23,534.83	19.4	28.6	19.6	32.4	30.3
B. 34104	10,237.05	6.7	15.6	32.1	45.6	13.2
B. 4098	7,679.89	14.6	21.0	7.3	57.1	9.9
B. 4362	3,433.72	28.2	28.3	32.6	10.9	4.4
B. 40105	1,236.32	.6	—	98.4	1.0	1.6
Co. 419	1,050.12	1.0	64.4	13.4	21.2	1.4
B. 47225	1,019.46	45.7	13.2	22.7	18.4	1.3
D. 14/34	633.83	7.2	15.9	2.5	74.4	.8
D. 142/41	600.98	9.0	58.9	—	32.1	.8
D. 62/43	410.35	22.4	11.8	6.4	59.4	.5
D. 158/41	409.70	—	30.6	9.7	59.7	.5
D. 37/45	392.69	6.7	48.0	6.7	38.6	.5
B. 46378	193.03	16.8	55.6	12.7	14.9	.3
Other Canes	692.78	42.9	14.5	16.4	26.2	.9
Totals	77,605.84					100.0

Of the newer seedlings, the table discloses that B.47225 is the most popular with estates managements.

(4) *The Changing Variety Pattern.* In Table VI is presented a summary of the percentage of the acreage under the various cane varieties in the Colony over the period 1944—1955.

TABLE VI.—Summary of the Percentage of the Acreage under the Major Cane Varieties, 1944—1955.

Variety.	Per cent. of Total Areas in the Colony.											
	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
P.O.J. 2878	65.1	54.8	40.4	27.6	13.6	6.9	1.6	0.4	—	—	—	—
Diamond 10	25.5	26.7	25.4	21.6	14.4	8.4	3.1	0.9	0.4	—	—	—
D. 166/34	2.2	2.2	1.6	1.0	0.5	—	—	—	—	—	—	—
Co. 419	3.0	4.9	6.5	7.7	8.2	6.8	4.5	2.7	1.7	1.4	1.5	1.4
Co. 421	1.6	6.3	15.1	19.4	19.3	14.2	8.5	3.5	2.1	0.8	—	—
D. 14/34	—	2.7	6.4	11.3	17.4	20.6	20.2	15.0	8.6	4.9	2.5	0.8
B. 34104	—	—	1.6	7.6	22.6	39.8	58.4	67.4	60.2	47.7	31.0	13.2
D. 200/36	—	—	—	1.5	1.9	1.7	0.7	—	—	—	—	—
B. 4098	—	—	—	—	—	—	—	—	1.3	4.6	9.2	9.9
B. 37161	—	—	—	—	—	—	1.4	3.6	9.4	14.4	18.9	30.3
B. 40105	—	—	—	—	—	—	—	—	0.5	0.7	0.8	1.6
B. 41227	—	—	—	—	—	—	0.3	3.8	12.7	21.7	30.5	33.6
D. 142/41	—	—	—	—	—	—	0.2	1.4	1.6	1.6	1.3	0.8
D. 158/41	—	—	—	—	—	—	—	—	0.3	0.4	0.5	0.5
D. 62/43	—	—	—	—	—	—	—	—	—	0.3	0.4	0.5
B. 4362	—	—	—	—	—	—	—	—	—	0.5	2.0	4.4
D. 37/45	—	—	—	—	—	—	—	—	—	—	0.3	0.5
B. 46378	—	—	—	—	—	—	—	—	—	—	—	0.3
B. 47225	—	—	—	—	—	—	—	—	—	—	—	1.3
Other Canes	2.6	2.4	3.0	2.3	2.1	1.6	1.1	1.3	1.2	1.0	1.1	0.9

It will be seen that the tendency in recent years is for a wider range of varieties to be planted. This tendency would probably have been even more pronounced but for the restrictions on the spread of certain varieties imposed by their lack of tolerance to leaf scald disease. It should be noted however, that the newer cane varieties appear to have somewhat more specific requirements both in respect to rainfall and soil conditions than did the old varieties.

(5) *Cycle Age of Crops.* Table VII summarises the distribution of the acreage under cane in plants and the various categories of ratoons for the period 1946 to 1955.

TABLE VII.—**Cycle Age of the Crops.**

Category.	Percentages.									
	1946.	1947.	1948.	1949.	1950.	1951.	1952.	1953.	1954.	1955.
Plants	29.3	28.4	31.3	31.2	33.1	28.8	27.8	26.1	25.0	26.1
1st Ratoons	23.6	27.0	26.1	26.5	27.4	28.2	23.4	23.9	25.1	23.9
2nd Ratoons	16.4	22.3	24.5	24.8	23.3	24.4	23.7	22.4	23.0	24.1
3rd Ratoons	18.2	11.8	14.3	15.2	12.6	15.1	18.8	18.2	17.8	18.6
4th Ratoons	10.1	7.0	2.5	2.0	3.1	3.0	5.4	8.5	7.4	5.0
5th Ratoons	2.4	3.5	1.3	.3	.5	.5	.9	.9	1.7	2.3
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(6) *Fertilizers.* Statistics relative to the value and quantity of fertilizers used on the sugar estates in British Guiana for the years 1952, 1953, and 1954 are presented in Table VIII. It will be seen that there was an appreciable increase in the amount of phosphatic fertilizers applied in 1954. There was also a very considerable increase in potash fertilizers although the actual tonnage is still relatively small.

The applications of limestone in 1954 increased over that of the previous year and closely approached the level of 1952.

TABLE VIII.—Values and Quantities of Fertilizers Used on Sugar Estates, 1952—1954.

Sulphate.		Basic Slag.			Superphosphate.			Hyperphosphate.			Muriate of Potash.			Sulphate of Potash.			Limestone.		
53.	1954.	1952.	1953.	1954.	1952.	1953.	1954.	1952.	1953.	1954.	1952.	1953.	1954.	1952.	1953.	1954.	1952.	1953.	1954.
3.236	14.244	185	35	7	62	11	1.885	—	408	414	—	4	300	—	3	233	8,016	5,971	7.877
4.436	1.686,106	20.189	2,275	547	4.336	2,365	302.412	—	34.897	35.219	—	470	34,762	—	391	27,727	162.362	135.510	182.856
23.48	118.37	108.95	64.43	77.39	69.50	197.90	160.46	—	85.57	85.10	—	117.50	116.04	—	130.33	118.79	20.25	22.70	23.22
57.3	57.1	0.8	0.2	—	0.3	—	7.5	—	2.1	1.7	—	—	1.2	—	—	.9	34.8	30.4	31.6
90.3	74.3	0.9	0.2	—	0.2	0.1	13.3	—	1.9	1.6	—	—	1.5	—	—	1.2	6.9	7.5	8.1

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1954.

SUGAR EXPERIMENT STATIONS' COMMITTEE.

The following members formed the British Guiana Sugar Experiment Stations' Committee for the year :—

The Director of Agriculture.....	..... *Chairman.*
Mr. R. R. Follett-Smith	..... *Messrs. Bookers Sugar Estates, Ltd.*
Dr. H. Evans	..... *Messrs. Bookers Sugar Estates, Ltd.*
Mr. H. F. Chapman	..... *Messrs. S. Davson & Co., Ltd.*
Mr. G. M. Eccles	..... *Messrs. S. Davson & Co., Ltd.*
Mr. W. O'B. Rigden	..... *Messrs. Sandbach Parker & Co., Ltd., (to May).*
Mr. J. Baxter	..... *Messrs. Bookers Sugar Estates, Ltd.*
Mr. A. G. Harley	..... *Messrs. Sandbach Parker & Co., Ltd., (to April).*
Mr. S. A. Angoy	..... *Secretary.*

RESEARCH SUB-COMMITTEE.

The personnel of the British Guiana Sugar Experiment Stations' Research Sub-Committee for 1954 was as follows :—

The Director of Agriculture	*Chairman*
Dr. H. Evans	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. A. G. Harley	*Messrs. Sandbach Parker & Co., Ltd., (to April).*
Mr. J. S. Edwards	*Messrs. S. Davson & Co., Ltd.*
Mr. R. O. Williams	*Chief Research Officer, Department of Agriculture.*
Mr. L. S. Birkett	*Sugar Agronomist.*
Mr. J. A. Spence	*Plant Pathologist, Department of Agriculture, (to August).*
Mr. J. A. Pires	*Plant Pathologist, Department of Agriculture, (from Sept.)*

STAFF OF SUGAR EXPERIMENT STATIONS.

L. S. Birkett, Dip. Agric. (I.C.T.A.), A.I.C.T.A.	*Sugar Agronomist.*
C. Cameron	*Field Manager.*
H. I. Gomes	*Field Assistant.*
S. L. Cameron	*Field Assistant.*
R. Dookun	*Field Assistant.*
S. Phillippe	*Field Assistant.*
K. Chung	*Statistical Assistant.*
S. Mangra	*Laboratory Assistant.*
S. Buchanan	*Typist.*

Personnel Changes, Leave, etc.

There were no changes in staff during 1954.

Absences of the Staff from duty during the year were as follows :—

	Casual Leave.	Sick Leave.
Mr. H. Gomes	8. 6.54 — 14. 6.54	5. 2.54 — 26. 2.54
Mr. S. Cameron	8. 6.54 — 15. 6.54 and 15.11.54 — 22.11.54	—
Mr. R. Dookun	15. 6.54 — 23. 6.54 and 9.11.54 — 16.11.54	—
Mr. S. Phillippe	22. 6.54 — 30. 6.54 and 29.11.54 — 6.12.54	—
Mr. K. Chung	26. 7.54 — 12. 8.54	—
Mr. S. Mangra	15. 6.54 — 30. 6.54	1. 7.54 — 7. 7.54
Miss S. Buchanan	1.12.54 — 17.12.54	

B.W.I.S.A. CONFERENCE OF SUGAR TECHNOLOGISTS'

The Sugar Agronomist attended the Conference of The British West Indies Sugar Technologists' Association which was held at the Imperial College of Tropical Agriculture, Trinidad, 1954.

EXPERIMENTS.

Experiments reaped during the year have been fully reported elsewhere in this Bulletin. These consisted of seventy variety trials (including five sorting trials), nine fertilizer trials and one cultivation cum variety trial.

SEEDLINGS INTRODUCED, ETC.

Cane Varieties received during the year from the Central Breeding Station, Barbados, B.W.I. were as follows : B.5212, B.5213, B.5235, B.5277, B.52107, B.52135, B.52144, B.52158, B.52162, B.52178, B.52184, B.52214, B.52222, B.52242, B.52253, B.52256, B.52257, B.52298, B.52306, B.52315, B.52316, B.52321, B.52341, B.52371, B.52389.

Those received form the Plant Quarantine Station Trinidad, B.W.I. were as follows : Ajax, Trojan, C.P.44 — 155, F.36 — 819, Ebene 1/37, Q.28, C.P.41 — 223, C.P.36 — 111, H.32 — 8560, H.39 — 3633, P.R.1000, H.38 — 4442, H.38 — 2915, H.37 — 1933, H.44 — 3098, H.39 — 7028, C.P.34 — 79, N.C.O. 310, H.39 — 5803, N.C.O. 300.

In addition, "fuzz" was received from Barbados from which 8,767 seedlings were raised.

Selections for field trials will be made in due course from the more promising of these seedlings.

TABLE I.—Varieties under Test and Undergoing Multiplication Etc., at December 31st, 1954.

Year.	Barbados.		Demerara.		Other Countries.	
	In Test.	Under Multiplication.	In Test.	Under Multiplication.	In Test.	Under Multiplication.
Prior to 1940	—	—	—	—	4	12
1940	2	—	—	—	1	—
1941	—	—	1	—	1	—
1942	1	—	—	—	—	—
1943	5	2	4	—	—	—
1944	2	—	1	—	—	1
1945	9	—	40	1	—	—
1946	19	1	35	4	—	—
1947	18	4	—	—	—	—
1948	15	—	—	—	—	—
1949	27	27	—	—	—	—
1950	28	28	—	—	—	—
1951	—	22	—	—	—	—
1952	—	25	—	58	—	—
1953	—	—	—	155	—	
Totals	126	109	81	218	6	13

FINANCE.

The sum of $65,000 was voted from the funds of the Sugar Experiment Stations' Committee for the working of the Station during the year. The total amount expended was $62,862.40. Of the amount spent from the vote to the Experiment Stations, the sum of $1,803.43 was used for wages in connection with Leaf Scald Disease Investigations. This amount was refunded by Government. The actual expenditure for operating the Station in 1954 was therefore $61,058.97.

Receipts from assessments for the year amounted to $39,760.02; those from the sale of canes to $25,355.22, while miscellaneous receipts were $3,566.44.

The quantity of canes sold in 1954 is the highest recorded to date. (See Table II).

MISCELLANEOUS.

Statistics for recent years pertaining to the number of field experiments commenced and harvested; cane cuttings distributed; samples analysed, etc., are presented in Table II.

TABLE II.— Statistics of Seedlings, Cane Distribution, Field Experiments, Cane and Soil Samples, Cane Sold and Visits Paid to Estates, 1945—1954.

Year.	Seedlings Basketed.	Cane Cuttings Distributed.		Field Experiments.		Cane Samples.		Soil Samples Taken.	Cane Sold to Pln. Ogle.		No. of visits to Estates.
		No. of Cuttings.	No. of Bags.	Started.	Harvested	No. Taken and analysed.	Cane Crushed (Tons).		Deliveries (Tons).	Net Receipts. $	
1945	6,043	578,240	4,448	98*	118†	605	14	95	1,461.02	6,812.25	173
1946	3,896	447,230	3,671	55*	111†	505	15	51	1,750.20	8,776.95	177
1947	—	172,900	1,330	27*	64†	403	15	18	2,153.37	9,542.47	211
1948	—	347,230	2,671	37	54	476	12	290††	2,232.05	9,892.36	162
1949	—	310,180	2,386	28	62	953	22	14†††	2,535.19	15,892.34	154
1950	—	105,720	1,762	18	65	719	24	—	3,135.25	20,080.18	154
1951	—	123,540	2,059	14	71	654	22	—	3,344.50	24,443.64	89
1952	58**	174,420	2,907	32	62	1,102	30	—	2,794.20	22,274.61	80
1953	1,133***	104,640	1,744	27	63	1,015	37	—	3,345.20	31,255.78	88
1954	8,767****	132,120	2,202	33	80	1,076	31	—	3,524.49	25,355.22	82

1945 *Includes 64 Maize Micro-plot Experiments.
1945 †Includes 53 " " "
1946 *Includes 30 " " "
1946 †Includes 39 " " "
1947 *Includes 5 " " "
1947 †Includes 5 " " "
1948 ††Includes 201 Sent to I.C.T.A.
1949 †††Sent to Yale University.
1952 **Demerara Crosses.
1953 ***Mauritius "Fuzz".
1954 ****Barbados "Fuzz".

The Experiment Station was visited by a party of forty-two students from the Imperial College of Tropical Agriculture, Trinidad, under Prof. A. B. Killick. The Station was also visited by Messrs. H. Mowry, T. Vaughan, J. Gwin, W. Scott, M. Le Cacheux and B. Johnson of the F.O.A.; F. Rogers and R. W. Piper of the Colonial Office; H. D. Hodnett of Rothamsted Experiment Station and several persons connected with the local sugar industry.

A "field day" for Cane Farmers was held on 22nd March, 1954.

ACKNOWLEDGMENTS.

As in the past, close contact was maintained between the Industry and the Staff of the Sugar Experiment Station.

The cordial co-operation of the Staff of the Sugar Estates and of the Sugar Experiment Station is very gratefully acknowledged.

L. S. BIRKETT,
Sugar Agronomist.

MAJOR DISEASES OF SUGAR CANE IN BRITISH GUIANA.

BY

J. A. PIRES, M.Sc., B.S.A., *Plant Pathologist.*

"LEAF SCALD" DISEASE.

Leaf Scald investigations during the past year have been confined to testing of breeding and newly imported varieties for resistance, and the measuring of the yield reduction occasioned by the disease.

Robertson (1) pointed out the difficulties of arriving at a satisfactory resistance rating for each variety and established a rating system with five groups. The ratings given were as follows:

A — Acute—complete death of all shoots.

VS — Very susceptible—heavy striping, chlorosis, stunting and death of some shoots.

S — Susceptible—striping, chlorosis and some stunting.

T — Tolerant—striping, no apparent stunting, may show slight amount of chlorosis.

R — Resistant—mild symptoms, rare striping, little or no chlorosis.

Later Robertson removed the Acute group rating and expanded the Very susceptible rating to include varieties which gave an acute reaction.

Spence (2) added a further category, Susceptible--Tolerant (S—T) to accommodate those varieties which appeared as intermediate between Susceptible and Tolerant. Ratings were assigned to varieties when it was believed that a true picture of their reactions had been obtained from observations of trials carried out in the sugar producing areas of the colony. The rating given to a variety was obtained by comparing its reaction in tests to those of standard varieties whose reactions were known. The present method of rating relies on the reactions of indicator varieties merely as a measure of the successfulness of the inoculation, and ratings are assigned only when these indicators react in the expected way. An example of the present use of indicator varieties is illustrated in the following hypothetical case. The variety B.34104 is used as

the Very Susceptible indicator and B.37161 used as the Susceptible-Tolerant indicator in the initial testing of the 1958 Barbados seedlings. Twenty sets of each variety are inoculated by steeping in an infective broth. After nine months only two of the B.34104 stools show signs of leaf scald. In these stools the symptoms are confined to mild striping and choloris. No symptoms develop in B.37161. However, seven stools of the variety B.58xx and ten stools of B.58xy show very susceptible symptoms.

In such a case ratings would be assigned only to the varieties B.58xx and B.58xy which developed Very Susceptible symptoms, for it would be concluded that even though the inoculation was not very successful (as shown by the Very Susceptible indicator B.34104) these varieties were severely diseased. Further trials would be laid down and ratings above Very Susceptible given only when B.34104 showed Very Susceptible symptoms and B.37161 showed Susceptible-Tolerant symptoms.

The present group ratings are as follows :—

VS — A variety is rated as very susceptible if its symptoms consist of severe striping, chlorosis, side-shooting, stunting and death of shoots. *e.g.* B.34104.

S — The susceptible category consists of varieties which exhibit striping, chlorosis and stunting to a small degree, and which survive the disease to maturity. A susceptible variety, e.g. D.62/43, is likely to show leaf scald symptoms throughout the life of a stool, but the variety is not killed by the disease.

S-T — Susceptible-Tolerant varieties, *e.g.* B.41227, show striping and a small amount of chlorosis for a short period in the life of a stool but the variety "grows away" from the disease and the symptoms disappear.

T — Tolerant varieties, *e.g.* D.158/41, show striping and little or no chlorosis in more than 75% of the trials in which they are planted.

R — Finally varieties are rated as resistant if their symptoms are confined to striping in less than 25% of the trials in which they are planted or if no symptoms are observed on the varieties.

The ratings assigned to all the varieties which have been tested by the Plant Pathology Division of the Department of Agriculture are given below. It should be pointed out that these ratings are not static, for a variety rating can be lowered if it shows more severe symptoms in subsequent tests.

RATINGS OF VARIETIES TESTED FOR RESISTANCE TO LEAF SCALD.

Very Susceptible.	Susceptible.	Susceptible —Tolerant.	Tolerant.		Resistant.	
			Barbados Seedlings.			
B. 34104	B. 40102	B. 37161	B. 37172	B. 47216	B. 3337	B. 47214
4409	4226	41227	40105	47217	4098	47225
4410	4448	4306	41211	47258	4304	47262
4411	44254	4362	43253	47314	4373	47379
4466	44279	43214	43391	47397	43330	48259
44244	4504	43229	43413	47399	44182	48375
44341	4553	43349	44111	4847	44278	4905
4502	45151	4506	44165	4851	4668	4906
4608	4691	4572	44269	4867	46116	4945
4692	46340	45188	4530	4881	46288	49122
46281	46369	4604	4534	4888	46295	49257
47147	4733	4699	4556	4893	46308	49376
47233	4755	46136	4596	4895	46399	49380
47256	47179	46144	45137	48228	4710	5041
48125	47306	46230	45152	48231	4738	5047
48177	47348	46232	45156	48232	4743	50126
48179	47419	46339	45270	48372	4746	50135
48350	49119	46351	4681	48384	4764	50184
4968	49377	4724	4688	4942	4765	50267
49166	50109	4744	46102	4956	4788	50345
49186		4781	46103	4966	47151	50370
49229		47298	46150	4995	47162	50377
49353		47380	46151	49197		
5011		48351	46190	49309		
5019		4970	46218	49355		
5073		49301	46248	5028		
50112		49354	46290	5037		
50153		49388	46293	5098		
		50155	46297	50115		
		50275	46378	50141		
			46384	50166		
			46394	50210		
			4711	50268		
			4747	50311		
			47135	50347		
			47204	50352		
			Demerara Seedlings.			
D. 14/34	D. 36/43	D. 26/39	D. 158/41		D. 31/46	
142/41	39/43	49/41	4/43		49/46	
27/45	51/43	18/43	54/43			
62/45	55/43	10/44	1/44			
123/45	58/43	173/45	3/44			
6/46	62/43	2/46	7/44			
83/46	27/44	141/46	132/45			
150/46	37/45		170/45			
	87/45		3/46			
	139/45		9/46			
	D. 19/46					
	20/46					
	29/46					
	183/46					
	275/46					
	277/46					
			Other Canes.			
M.112/34	Co.419	Diamond 10	Eros		M. 134/32	
Trojan	Comus	Co.421	M. 213/40			
C.P.44-155	N.Co.310	Pindar	M. 423/41			
F.36-819			P.O.J. 2878			
			P.O.J. 2967			
			P.O.J. 3016			
			Breeding Canes.			
28 N.G. 105	B. 2935	B. 39250	B. 35197		B. 37254	
28 N.G. 219	35247	41277	37226		37256	
28 N.G. 251	39274	32 M.Q. 629	38272		39246	
B. 35269	40124	S.C. 12/4	39254		40123	
44226	41276	Kavangire	40122		4459	
	4454		41242		44132	
	44130		44131		44236	
	44227		48357		B.H. 10/12	
	4864		48361		Ba. 11569	
	49282		32 M.Q. 579		Q. 813	
	32 M.Q. 657		Oshima		28 N.G. 7	
	Badilla		Uba		Burma	
					Dacca	
					Kloet	
					Local Co.	
					Pasoeroan	
					Raiatea	
					Tabongo	

Yield Reduction

Experiments designed to give statistical results on the reduction in yield occasioned by leaf scald were laid down at Plns. Sophia and Skeldon. The experiment which was carried out at Sophia did not give significant yield reductions. This may be explained by the small amount of infection which was present in inoculated plots. At Skeldon significant reductions were recorded for Tons cane per acre and Tons Pol. per acre. These results are summarised in Tables I and II.

TABLE I.—**Results of the leaf scald yield reduction trial in Field 17 West, Pln. Sophia.**

Variety.	Treatment.	Tons Cane per Acre.	Tons Pol. per Arce.	Pol. % Cane.	Juice Purity.
B. 4098	Control	48.21	6.97	14.51	88.9
	Inoculated	47.73	6.53	13.82	86.8
B. 41227	Control	48.37	6.54	13.57	84.5
	Inoculated	51.66	6.49	12.62	82.6
D. 62/43	Control	53.23	6.91	13.04	83.6
	Inoculated	45.41	5.69	12.74	82.4
Significant Difference		—	.72	—	4.04

TABLE II.—**Results of the leaf scald yield reduction trial in Field 133 Sec. 81, Pln. Skeldon.**

Variety.	Treatment.	Tons Cane per Acre.	Tons Pol. per Acre.	Pol. % Cane.	Juice Purity.
B. 41227	Control	45.31	6.34	14.00	84.7
	Inoculated	47.45	6.59	13.89	86.5
B. 37161	Control	43.25	5.41	12.50	84.5
	Inoculated	41.16	4.94	12.03	83.9
B. 34104	Control	38.03	5.13	13.46	85.8
	Inoculated	28.71	3.74	13.00	85.0
Significant Difference		3.45	.50	.49	—

RATOON STUNTING DISEASE.

Following Mr. D. R. L. Steindl's visit to British Guiana in 1953 and his finding of symptoms suggestive of ratoon stunting disease at Plns. Uitvlugt and Leonora—three experiments were laid down to determine whether the symptoms observed were actually those of ratoon stunting disease or whether they might have been due to soil conditions. Two trials were laid down at Pln. Uitvlugt during the first quarter. The first was a small trial from which observations for symptoms are made. The second was a larger trial which was designed to measure the reduction in yield occasioned by the disease. Setts were treated in hot water to kill the pathogen if it were present in the material suspected of being diseased by Mr. Steindl, while controls consisted of healthy material heat treated, and healthy material untreated. Poor germination of treated setts has caused the experiment to be changed from a yield reduction trial to a symptom observation trial, for the reduction in yield due to poor germination would exceed any benefit which might have been derived from control of the disease killing the virus. The third experiment was laid down at Pln. Albion to measure yield reduction. Here too, heat treatment resulted in very poor germination and the experiment was abandoned. No symptoms suggestive of ratoon stunting disease have been observed in the trials of Uitvlugt up to the time of writing.

CHLOROTIC STREAK.

Chlorotic streak is probably the most prevalent sugar cane disease in British Guiana. No accurate assessment of the reduction in yield which is occasioned by this disease is available at present. However, experiments have been laid down to give statistical information on the effect of the disease on the yields of B.4362, D.37/45 and D.142/41 which show marked leaf symptoms. Further experiments are being laid down with the varieties B.37161, B.41227 and B.47225.

References :—

(1) Robertson, J. S. Sugar Bulletin No. 20, 1951. Department of Agriculture, British Guiana.

(2) Spence, J. A. Sugar Bulletin No. 22, 1953. Department of Agriculture, British Guiana.